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THE LANCET.

No. 4270. Vol. CLXIX. LONDON, SATURDAY, JULY 1, 1905. [Pp. 120+88.

CONTENTS.

THE OLIVER - SHARPEY LECTURE (Abstract of) on the Influence of Atmospheric Pressure on Man. Delivered before the Royal College of Physicians of London on April 6th, 1905, by LEONARD ERSKINE HILL, M.B. Lond., F.R.S., Lecturer on Physiology at the London Hospital Medical School.—(*Illustrated*).. 1

LECTURES on Carbohydrate Metabolism. A Course of Advanced Lectures in Physiology, delivered at the University of London, by F. W. PAVY, M.D. Lond., LL.D. Glasg., F.R.S., Honorary Physician to King Edward VII. Hospital; Consulting Physician to Guy's Hospital.—Lecture II. 4

THE CAVENDISH LECTURE on Disease of the Heart. Delivered before the West London Medico - Chirurgical Society on June 23rd, 1905, by JAMES F. GOODHART, M.D., LL.D. Aberd., F.R.C.P. Lond., Consulting Physician to Guy's Hospital, &c..... 10

ORIGINAL ARTICLES.

The Reaction of Phenylhydrazin with other Substances than Dextrose occurring in the Urine. By P. J. CAMMIDGE, M.B. Lond., D.P.H. Cantab., &c. (*Illustrated*) 14

Uric Acid: A Rational Treatment for its Elimination, in the Light of Recent Research. By HOBART FENNER, L.R.C.P. Edin., M.R.C.S. Eng..... 19

Note on the Recent Outbreak of Typhoid Fever at Lincoln. By R. CECIL CLEMENTS, M.R.C.S. Eng., L.R.C.P. Lond. 22

Charcot's Disease of the Ankle in a Case of General Paralysis of the Insane. By W. BILLINGTON, M.S. Lond., F.R.C.S. Eng., Surgeon to Out-patients at the Queen's Hospital, Birmingham; and A. STANLEY BARNES, M.D. Lond., M.R.C.P. Lond., Pathologist to the Queen's Hospital, Birmingham..... 23

Fracture of the Os Penis in Otters. By J. BLAND-SUTTON, F.R.C.S. Eng., Surgeon to Out-patients at the Middlesex Hospital.—(*Illustrated*) 23

REVIEWS AND NOTICES OF BOOKS.

Diseases of the Liver, Gall-bladder, and Bile-ducts. By H. D. ROLLESTON, M.A., M.D. Cantab., F.R.C.P. Lond. 24

Diseases of the Blood (Nothnagel's Encyclopædia of Practical Medicine: English Edition). By Professor Dr. P. Ehrlich, Professor K. von Noorden, Dr. A. Lazarus, and Dr. F. Pinkus. Edited, with additions, by Alfred Stengel, M.D. 25

Manual of Antenatal Pathology and Hygiene: The Embryo. By J. W. BALLANTYNE, M.D., F.R.C.P. Edin., F.R.S. Edin. ... 25

Nursing in Eye, Ear, Nose, and Throat Diseases. By A. Edward Davis, A.M., M.D.; and Beaman Douglass, M.D.... 27

The Medical Magazine 27

The Practitioner 27

The Royal London Ophthalmic Hospital Reports. Edited by William Lang, F.R.C.S. Eng.... 28

NEW INVENTIONS.

An Ophthalmoscope. — (*Illustrated*)..... 28

LEADING ARTICLES.

LUNACY ACTS AMENDMENT BILL (LONDON) (No. 2)..... 33

SMALL-POX IN LEICESTER DURING 1904 34

THE PETERHEAD HOSPITAL 35

ANNOTATIONS.

The Deficiencies of British Inns.. 36

The Metropolitan Water-supply.. 37

Precipitate Labour..... 37

A Practical Investigation of the Effect of Preservatives upon Digestion and Health 37

Liquosone in the Coroner's Court 38

Smoke on the River Thames 39

Pathology at Oxford 39

Toxic Symptoms after Operations on Hydatid Cysts 39

Royal College of Surgeons of England: Election of Members of Council 40

The Order of St. John of Jerusalem in England 40

Dr. Armand Bernard and the Liverpool Royal Infirmary 40

"Chemist-Opticians" 41

"Return" Cases of Scarlet Fever 41

Certificates of Proficiency in Vaccination 41

Women as Pharmacists 42

The Location of the Fibres for Temperature and Pain in the Tract of Gowers 42

Conversazione at University College, London..... 42

Proposed National League for Physical Education and Improvement..... 42

MEDICINE: ITS PRACTICE AND ITS PUBLIC RELATIONS.

Chapter XVIII.

The Public and the Medical Profession 43

LOOKING BACK.

(From THE LANCET, Saturday, June 30, 1827.)

House of Commons; Royal College of Surgeons 46

VITAL STATISTICS:

Health of English Towns 47

Health of Scotch Towns 47

Health of Dublin 47

SPECIAL ARTICLES.

Mount Vernon Hospital for Consumption, Northwood.—(*Illustrated*) 29

The Army Medical Report for 1903.—[Concluding Notice] ... 32

Royal College of Physicians of London 32

Epsom College..... 45

The Services: The Indian Army Command 47

The House of Lords Committee on the Sandgate "Sanatoriums" Nuisance 50

Birmingham: University Intelligence; Presentation to Dr. R. Rickards; "Reformatory" Conference in Birmingham; Hospital News; the Warley Woods; Birmingham Board of Guardians; the Health of the City 52

Liverpool: The Treatment of Epilepsy (a Year's Work at the Maghull Home for Epileptics); a Record Low Death-rate in Liverpool; the Extension of the Liverpool Medical Institution; the Liverpool Royal Infirmary 53

Manchester: Non - notification of Small-pox at Accrington; Births and Deaths in Cheshire 54

Northern Counties Notes: New Appointments at the Royal Infirmary, Newcastle - upon - Tyne; Medical Association for Haltwhistle; Memorial to the late Dr. James Murphy; the Prevention of Consumption; Newcastle Throat and Ear Hospital 54

Wales and Western Counties Notes: Medical Fees under the Midwives Act; the Medical Officer of Health of Chipping Sodbury; Typhoid Fever at Bridgend; the Sale of a Medical Practice in Bideford... 55

Scotland: University Reform; Tram-car Life-guards; Greenock Vaccination Statistics; Peterhead New Fever Hospital 55

Ireland: The Typhoid Fever Epidemic in Newtownards; the Small-pox Wards in Lurgan Workhouse 56

Paris: Abolition of the Internat en Pharmacie; Treatment of Pityriasis Versicolor; the Eyesight of Cyclists and Motorists; Sea Water in the Treatment of Tuberculosis; Venereal Diseases..... 57

Italy: The Weather; National Hygienic Competition; the Medical Profession in Parliament 57

New York: The Prevention of Tuberculosis among Negroes; Yellow Fever in the Isthmus of Panama; Patent Medicines; Rush Medical College, Chicago 58

Notes from India: Adoption of a Standard Time for India; the Decline of the Plague Epidemic; Extended Period of Study for the Medical Degree of the University of Calcutta; A Case of Suttee; Cigarette Smoking among the Natives of India ... 58

THE HOSPITAL SUNDAY FUND.

List of Donations to the Fund ... 60

CORRESPONDENCE.

The Royal Medical and Chirurgical Society: The Presidents' Portraits (Mr. J. Y. W. MacAlister) 48

"Transcendental Medicine" (Dr. W. E. Henderson) 48

The Treatment of Ringworm of the Scalp by the X Rays (Mr. Winwood Smith)..... 49

Dust-borne Typhoid Fever (Mr. Herbert Jones)..... 49

The New County History of Northumberland (Dr. R. S. Peart, Dr. Lachlan Fraser) 49

Royal College of Surgeons of Edinburgh (Dr. David Walsh).. 49

Wood *v.* Bailey (Dr. John Cowper) 49

Certification under the Lunacy Acts 50

Medical Certificates in respect of School Attendance 50

Wanted—a Home (Dr. Bertram Addenbrooke) 64

To Deaden Sound (Dr. E. D. Mapother) 64

OBITUARY.

Arthur David Griffiths, M.D. Brux., L.R.C.P. Lond., M.R.C.S. Eng..... 59

William Alder, L.S.A. 59

MEDICAL NEWS.

The Vegetarian Congress..... 9

A Hospital Tent 59

Health Conditions in the Faroe Islands 59

Pass-lists of the Society of Apothecaries of London and Trinity College, Dublin 60

University of Durham College of Medicine: the Bacteriological Department 60

National Sanatorium for Consumption and Diseases of the Chest 60

British Electro-therapeutic Society..... 61

Hospital Extension at Tottenham 61

Donations and Bequests 61

Hospital Appeals..... 61

PARLIAMENTARY INTELLIGENCE.

Notes on Current Topics: New Medical Bills; Medical Affairs in Scotland 62

House of Commons: Removals from Medical and Dental Registers; Lymph Calves as Food; Coccidiosis in Rabbits... 62

Books, &c., received 62

Appointments 63

Vacancies 63

Births, Marriages, and Deaths..... 63

Notes, Short Comments, and Answers to Correspondents..... 64

Medical Diary 64

INDEX ..... iii.-i.

LIST OF ILLUSTRATIONS ..... ii-iii.

TITLE-PAGE.

FOR INDEX TO ADVERTISEMENTS SEE PAGES 2 & 4.

R31
.L3

INDEX.

MEDICAL AND OTHER BOOKS AND PUBLICATIONS.

COVER.

PAGE

BAILLIERE, TINDALL & COX:—
Brown & Stevenson.. Squint Occurring in Children 1
Sichel ..... Hernia 1
" ..... Descended Testis 1

BALE, SONS & DANIELSSON:—
Moullin .... Inflammation of the Appendix 1
" .... Treatment of Gastric Ulcer 1
Worth ..... Squint 1

CAMBRIDGE UNIV. PRESS:—
Glenow .... Geography of Disease.. 1
Duckworth.. Studies from the Anthropological Laboratory 1
" .. Morphology, &c. 1
Journal of Hygiene 1
Heiberton .. Morbid Anatomy 1
Simpson .... Treatise on Plague 1

GLAISHER:—
Owen ..... X-Rays 1

KIMPTON H.:—
Colbeck & Chaplin .. Science and Art of Prescribing 1

LEWIS:—
Herring .... Sterilisation of Urethral Instruments 1
Lewers ..... Diseases of Women 1
" ..... Cancer of the Uterus .. 1
Moullin .... Enlargement of the Prostate 1
" .... Inflammation of the Bladder 1
Roth ..... Curvature of the Spine 1

LONGMANS, GREEN & CO.:—
Bennett .... Recurrent Effusion into the Knee Joint 1
Halliburton.. Chemical Physiology .. 1

PENTLAND, Y. J.:—
Yeomans & Miles..... Manual of Surgery 1

SAUNDERS & CO.:—
Saunders' Year-book of Medicine and Surgery for 1905 1

BAILLIERE, TINDALL & COX:—
Bidwell .... Intestinal Surgery..... 11
Bray ..... Constipation 11
Edwards .... Carcinoma of the Rectum 11
Jellett ..... Manual of Midwifery .. 8
Lake & Barwell .. Laryngeal Phthisis 8

BALE, SONS & DANIELSSON:—
Simpson .... Adenoid Growths 8
Worth ..... Squint 8

BELL & BRADFUTE (EDIN.):—
Bedford .... Urine Analysis 8

CHURCHILL, J. & A.:—
Bury ..... Spinal Caries 7
" ..... Spinal Curvature 7
" ..... Deformities of the Head and Neck 7
" ..... Amputations 7
" ..... Manual of Orthopædy 7
Cripps ..... Ovariotomy, &c. 8
Harrison.... Stone, Prostate, &c. 8
Snow..... Treatise on Cancers 11
" ..... Forcible Massage 11

CORNISH BROS. (BIRMINGHAM):—
Sawyer, Sir J. Practical Medicine 8
" Insomnia, &c. 8

GLAISHER:—
Bell ..... Cancer Problem in a Nutshell 6
Blake ..... Intestinal Catarrhs 6
Cowen ..... X-Rays 6

GLAISHER—(Continued).
Culingworth Clinical Illustrations .. 6
Frossard .. Mucous membranous Enterocolitis 6
Harschell .. Intravenous Technique 6
Hutchinson.. Human, &c., Pathology 6
Prendeville. Ethyl Chloride 6
" Anæsthetic Difficulties 6
Favill ..... Neurasthenia 6
Westminster Hospital Reports..... 6
Williams .... Short Essay on Insanity 6

KEGAN PAUL & CO.:—
Taylor ..... Diseases of the Eye 11

LONGMANS, GREEN & CO.:—
Goodall & Miles..... Diseases of the Anus, &c. 6
Spriggs..... The Life and Times of Thomas Wakley 10

MACMILLAN & CO.:—
Lockwood .. The Surgery of Appendicitis 8

MEDICAL PUBLISHING CO.:—
Lane ..... Chronic Constipation .. 8

PENTLAND, Y. J.:—
Lockwood .. Aseptic Surgery..... 8
" .. Cure of Hernia, &c. 8

PRACTITIONER, Ltd.:—
Clarke ..... Dislocation of the Hip.. 6

REEMAN:—
Health and Disease in Relation to Marriage 7

RENSHAW:—
Wood ..... Application of Trusses 11

SAUNDERS & CO.:—
Hatcher & Sollman .. Materia Medica 8
Medical Hand-Atlases 8
Saunders' Year-Book for 1902 8

SAUNDERS—(Continued).
Sans ..... On the Urine 8
Stevens' Manual of Practice 8

SMITH, ELDER & CO.:—
Barnes ..... Obstetric Medicine &c. 3
" ..... Manual of Midwifery for Midwives..... 3
Cheyne..... Antiseptic Surgery 3
" ..... Antiseptic Treatment of Wounds 3
Da Costa .... Medical Diagnosis..... 3
" with ..... Anatomy 3
Farquharson Guide to Therapeutics 3
Ferrier..... Functions of the Brain 3
Finlayson's Clinical Manual for the Study of Medical Cases 3
Gee..... Auscultation, &c. 3
Heath's Dictionary of Practical Surgery 3
Juler..... Ophthalmic Science, &c. 3
Keetley .... Orthopædic Surgery.... 8
" .... Gastric Ulcers 8
" .... Complicated Wounds .. 8
Lawson ..... Diseases and Injuries of the Eye 8
Leftwich .... Index of Symptoms 3
Marshall & Hinds .... Practical Zoology .. 3
Playfair .... Practice of Midwifery .. 3
Schäfer..... Practical Histology 3
Simon, Sir J. English Sanitary Institutions 3
Taylor ..... Index of Medicine..... 3
Tirard ..... Albuminuria, &c. 3
Walshe..... Diseases of the Heart .. 3
" ..... Diseases of the Lungs .. 3
Wood ..... Therapeutics 3

THE LANCET:—
Difficulties under the Infectious Disease (Notification) Act, 1895..... 11
THE LANCET Analytical Commission on Brandy..... 11

MEDICAL LIBRARIES, &c.:—
Behnke—Stammering 8

OFFICIAL AND GENERAL ANNOUNCEMENTS.

AFFOINTMENTS VACANT:—
Army Medical Service 75
Charing Cross Hospital 70
City and County Borough of Chester.. 76
City of London and East London Dispensary 75
County Borough of Huddersfield 74
County Borough of Southampton 72
Derbyshire Royal Infirmary... 76
East London Hospital for Children, Shadwell 77
Gateshead Dispensary 77
Great Northern Central Hospital 75
Hastings St. Leonards &c., Hospital 76
Highlands and Islands of Scotland..... 75
Hôtel for Consumptive Women 75
Hos. for Sick Children, Gt. Ormond-street 76, 77
Leavesden Asylum 76
Liverpool Dispensaries 73
Merionethshire Asylum, Aberpwllheny 76
Municipality of the Town of Singapore 75
Norfolk and Norwich Hospital 75
North-Eastern Hospital for Children, Hackney-road 76
North Riding of Yorkshire Lunatic Asylum 75
Queen Charlotte's Lying-in Hospital, Marylebone-road..... 76
R., Cornhill 76
Royal Alexandra Hospital for Sick Children, Brighton 77
Royal Berks County Hos., Winchester 76
Royal Hospital for Diseases of the Chest City-road 75
Royal Mineral Water Hospital, Bath 74
Royal Sea-bathing Hospital, Margate 75
Royal Victoria Hospital, Bournemouth 76
School of Medicine, Cairo 76
South Ulst 75
St. Olave Infirmary, Camberwell 77
St. Peter's Hospital for Stone, &c 77
Swansea General and Eye Hospital 75
University of Leeds 76
Western General Dispensary 75
Westminster Hospital 75

ASSISTANCIES, MEDICAL 69

ASYLUMS, HOMES, &c.:—
Ashwood House, Kingswinford 69
Barnwood House Hospital..... 68
Bishopstone House, Bedford 68
Bodorgan Manor, Bournemouth 74
Buntingford House Retreat, Herts .. 68
Camberwell House, Peckham-road .. 74
Chippice, The, Nottingham..... 68
Coronation House, Hove..... 74
Cotswold Sanatorium 68
Crockahury Sanatorium, Surrey..... 69
Dalrymple House, Rickmansworth .. 68
Dartmoor Sanatorium 69
David Lewis Colony, Alderley Edge.. 68
Denton Jones' Sanatorium, Parkstone 69
Derbyshire Asylum 69
Dr., Eastbourne 74
Dr. Rashleigh's Sanatorium, Dartmoor 69

ASYLUMS—(Continued).
Dunstone Park Sanatorium, Paignton 74
East Anglian Sanatorium, Nayland .. 70
Enclosed-d, Ashford 68
Eden Hall Sanatorium 70
Fairford Retreat, Gloucestershire..... 68
Fergusson, Barnet 68
Flower House, Catford 68
Gaitskell, Burgess hill 74
Grove House, Church Stretton 68
Grove, The, Catton, Norwich 68
Hailey Open Air Sanatorium, Ipsden 70
Haydock Lodge, Newton-le-Willows 67
High Shot House, Twickenham 68
Hitch, Mrs., Hollington 68
House Sanatorium, Bournemouth 74
H., Westminster 73
Inverath Lodge Retreat, Collingburgh 67
Lady Superintendent, Brighton 74
Lady Superintendent, Streatham 74
Lawson, Nordrach-on-Dee, Ranchory 69
London Fever Hospital 73
London Open-Air Sanatorium, Wokingham 70
Melbourne House, Leicester..... 69
Moat House, Tamworth 69
Moorcote Open-Air Sanatorium, Everuley 70
Nordrach in Wales 69
Nordrach-upon-Mendip Sanatorium... 69
Northlands Retreat, Wandsworth 68
Northumberland House, Finsbury-park 68
Northwoods House, Winterbourne .. 67
Norwood Sanatorium 68
No. 110, L.O., Strand..... 74
No. 121, L.O., Strand..... 74
No. 1051, L.O., Strand 74
Ochil Hills Sanatorium, Kinross-shire 70
Overdale, Whitefield..... 69
Pen-y-n-Dinas, Meriouethshire 61
Plympton House, South Devon 69
Rostrevor Open-Air Sanatorium, Warrenpoint..... 63
Shaftesbury House, Formby 67
Springfield House Private Asylum, Bedford 68
St. Andrew's Hospital, Northampton 67
St. Luke's Hospital, E.C. 68
Stocker, Craven-street..... 68
Stone House, Canterbury 74
Stretton House, Church Stretton 68
S., 102, Gracechurch street 74
Tallerman Treatment Institute 73
Thandercliffe Grange, nr. Rotherham 73
Tower House, Leicester 68
Vale of Clwyd Sanatorium..... 70
Warneford Asylum, Oxford 68
West Malling-place, Kent 68
Wonford House, Exeter 68
Wye House, Buxton 68
Wyke House, Isleworth 68
Yarrow Convalescent Home, Broadstairs 67

COMPANIONS:—
No. 114, L.O., Strand..... 68
No. 120, L.O., Strand..... 85
Secretary, Regent's-park 68

FINANCIAL, &c.:—
El Khedr Bank..... 61
Equitable Reversionary Interest Soc. 62

HEALTH RESORTS, BATHS, &c.:—
Aberystwith, the Biarritz of Wales .. 71
Austrian Travel Bureau—
Tours in Austria 73
Baden in Switzerland 73
Badenweiler 73
Bad Kissingen 72
Bad Nauheim 72
Ergenburg 72
Folkestone..... 71
Matlock Bath 71
Moffat Hydropathic 71
Piombières..... 72
Rosenberg's, Malbork 73
South Devon Health and Holiday Resort, Bishop's Teignton 72
Woodhall Spa Baths 73

HOMES, &c., WANTED:—
Fox 230, London 74
No. 1105, L.O., Strand 74

HOTELS:—
Bad Nauheim—Park Hotel..... 61
Carton Court Hotel, New Milton 60
Ditecombe Hotel 63
Kissingen—Hotel de Russie 62
Montreux Hotel and Chateau, Belmont 63

HOUSE & ESTATE AGENTS:—
Deelberg, Knightrider-street 62
Elliott, son & Boyton, Vere-street.... 62
Maxwell-Draper & Barker, Ch ayside 62
No. 103, L.O., Strand..... 62
No. 1044, L.O., Strand 62
Tenner, Eastbourne 62
Tucker, Bath 61
Walker, Aylesbury 63
W., Aubrey 65
Weatherall & Green, Chancery-lane.. 62
Consulting-rooms:—
A. L. P., Piccadilly 63
Harley, Piccadilly 62
Knight, Frank & Rutley, Constitution-street 62
K., Piccadilly 62
No. 121, L.O., Strand..... 62
X., Southwark-street 62

LIFE & FIRE ASSURANCES:—
Prudential 63

MEDICAL ACCOUNTANTS, &c.:—
Turner 63

MEDICAL AGENTS:—
Dr. Fred Hall 61
Lee & Martin 61
London Medical Agency 60
Manchester Medical Agency..... 61
Manchester Medical, &c., Association 61
Medical Agency 61
Moore 61
Needes, Herbert 60
Needes, T. G. 77

MEDICAL AGENTS—(Continued).
Orridge 60
Pocock & Hedley 61
Scholastic, Clerical, &c., Assoc. 71, 79, 62
Southern Medical Agency 61
Turner..... 60
Wilson & Son 60

MEDICAL SCHOOLS (LONDON):—
Cooke's School of Anatomy 71
Guy's Hospital Medical School 74
West London Post-Graduate College.. 61

NURSING INSTITUTES:—
General Nursing Association 64
Hos. for Sick Children, Gt. Ormond-st. 64
Leeds Trained Nurses' Institution.... 64
London Nurses' Association 64
Male and Female Nurses' Assoc. 64
Male Nurses' Association 64
Male Nurses' Co-operation..... 64
Middlesex Hos. Trained Nurses' Inst. 64
Nurses' Co-operation, Portland-place 64
Queen Charlotte's Lying-in Hos..... 64
St. John's House 64
Temperance Male and Female Nurses' Co-operation 63
Temperance Male Nurses' Co-operation 64
York-road General Lying-in Hospital, Lambeth 64

OFFICIAL NOTICES:—
Apothecaries' Hall of Ireland 61
Dublin, Royal Preceptors..... 61
Electro Sulphur and Light Syndicate 74
Guy's Hospital..... 61
London Post-Graduate Association .. 61
London Throat Hospital 61
Mount Vernon Hos. for Consumption 61
Pathological Laboratories, Langham-place 61
Royal Ear Hospital, Soho 61
Royal Naval Medical Examination .. 61
University of London 61

PARTNERSHIPS & PRACTICES 63

RAILWAY & STEAMSHIP CO.'S:—
Albion S. S. Co.—Norway Cruises 62
Booth S. S. Co.'s Tours..... 61
Great Eastern Railway Co.—
Holidays in Belgium 63
New Zealand Shipping Co..... 61
Orient-Pacific Line Pleasure Cruises.. 63
Royal Mail Steam Packet Co.—Tours 63

SCHOOLS, PREPARATORY, &c.:—
Auber's English, &c., School Agency 62
Manchester Physical Training College 62
S. S., Sackville-street 62

TUTORS & LECTURERS:—
Behnke 61
Duchesne 62
Evans 62
Fellowships 62
Gemmell 61
Gooch 62, 63
Kerin 63
Knight 61
No. 233, L.O. .. 61
Univ. Exam. Postal Inst... 62
Van Praagen 62
Weymouth 61

(For Index to Trade and Miscellaneous Advertisements see page 4).

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ABSTRACT OF

The Oliver-Sharpey Lecture

ON

THE INFLUENCE OF ATMOSPHERIC PRESSURE ON MAN.[1]

Delivered before the Royal College of Physicians of London on April 6th, 1905,

BY LEONARD ERSKINE HILL,
M.B. LOND., F.R.S.,
LECTURER ON PHYSIOLOGY AT THE LONDON HOSPITAL MEDICAL SCHOOL.

MR. PRESIDENT AND GENTLEMEN,—I must first of all acknowledge the honour which the council has done me in inviting me to give this lecture and at the same time express my appreciation of the energy and invention with which Dr. George Oliver has pursued the pathway of research and the valuable stimulus which he has given to future inquirers by founding this lectureship.

My subject naturally divides itself into two parts—the influence of lessened and of increased atmospheric pressure. The one derives its practical importance from mountain sickness and mountain air therapeutics, the other from the sickness of compressed-air workers and the therapeutics of oxygen inhalation. Dr. Theodore Williams as Lumleian lecturer in 1893 set before you the climatic influences of mountain resorts. I shall confine myself to the results of physiological inquiry.

THE EFFECT OF LESSENING THE ATMOSPHERIC PRESSURE; MOUNTAIN SICKNESS.

Analysing the blood gases Bert (1870–80) found the oxygen in the blood was diminished by one-half when the barometric pressure was lowered two-thirds. Several years later Hufner worked out the oxygen dissociation curve of the blood, using purified solutions of hæmoglobin. He concluded that the hæmoglobin remains more than 90 per cent. saturated with oxygen when the barometric pressure is lowered to one-fifth. This dissociation curve of Hufner rendered difficult the acceptance of Bert's explanation of mountain sickness—to wit, oxygen hunger. Hufner himself explained the oxygen hunger by the supposition that a marked difference in oxygen tension between the alveolar air and the blood is required to drive the oxygen through the alveolar wall. Löwy and Zuntz have recently re-investigated the whole matter and have proved that the methods used by Hufner in the preparation of hæmoglobin modify very greatly the oxygen dissociation curve. They found that hæmoglobin solutions hold oxygen much faster than fresh blood and, confirming the results of Bert, have determined that fresh blood shaken with air is only 88 per cent. saturated with oxygen, while the blood in the body exposed to alveolar air (in which the oxygen tension equals 13·5 per cent. of an atmosphere) is only 79 per cent. saturated. Zuntz and Durig have also disproved the above-mentioned supposition of Hufner. Experimenting with frog's lungs they found that a very small difference of oxygen tension (six millimetres) between alveolar air and venous blood is sufficient to maintain diffusion, enough even to satisfy our needs in times of strenuous exertion such as climbing. Mosso and Zuntz and their co-workers have in the last few years carried out a series of exact investigations on themselves while dwelling on the top of Monte Rosa, 4560 metres (nearly 15,000 feet above sea level). They utilised the Regina Margherita hut as a laboratory. In the last expedition of Zuntz and Durig the oxygen tension in Durig's alveolar air fell on the first day as low as 6·3 per cent. of an atmosphere. This makes the oxygen saturation of his blood 65·9 per cent. He suffered from severe migraine and other symptoms of mountain sickness.

It is not so much the quantity as the tension of oxygen in the blood which is of importance under such conditions. This is shown by the fact that an animal whose hæmoglobin has been one-third saturated with CO or from which one-third of the blood has been removed suffers at the same partial pressure of oxygen as a normal animal (Haldane an Lorrain Smith).

Increased pulmonary ventilation is the mechanism by which the alveolar oxygen tension is kept up in high altitudes. The greater the volume of the tidal air the more does the composition of the alveolar air approximate to that of the external air. A deep breather can thus attain to far higher altitudes than a superficial breather (Löwy). Shallow breathing animals such as rabbits die if kept for more than three days at 350 mm. Hg. (6000 metres altitude) and their organs show marked signs of fatty degeneration (Lewinstein, Schrötter). The mountain climber needs a powerful heart rapidly to circulate blood through his lungs and requires to be a deep breather, otherwise he suffers from oxygen hunger. Hence the varying altitudes at which different men are affected. Climbing enormously increases the oxygen use. Resting in Berlin Zuntz used 232 cubic centimetres oxygen per minute; while climbing a glacier on Monte Rosa he used 1329 cubic centimetres. His pulmonary ventilation increased from 4·755 litres per minute resting at Berlin to 7·613 litres resting on Monte Rosa, and to 46·74 litres while climbing the glacier. Hence the aggravation of mountain sickness by exertion.

Training makes an enormous difference. The heart and respiratory mechanism become adjusted to the enormous demands made upon them. The surplus body weight is reduced and the load to be lifted thus lightened. New movement complexes are established and carried out with the maximum of economy. A trained athlete can turn 30 per cent. of his total energy into external work, an untrained man only 10 or 15 per cent. The untrained man becomes over-heated. Owing to the diathermancy of the upper regions of the air due to its freedom from dust and vapour the radiant heat of the sun is very great. This and the muscular work of climbing together may raise the body temperature of the town dweller to 103° F. (Pembrey, Arkle)—a temperature which by itself will lead to breathlessness. It is well known to climbers that windless sun-heated valleys and gullies produce more sickness than exposed ridges. Conway recommends climbing by night or cloudy days. On the other hand, an Alpine soldier of splendid physique and trained to mountaineering carried 40 kilogrammes up the glacier of the Gnifetti peak with a rise of temperature not greater than a few points of a degree (Mosso). Manca, after 70 days' training with dumb-bells, found he could do five times the work he could do on the first day. The CO_2 output produced by climbing Berne cathedral was increased fourfold at first and only threefold after training (Kronecker). A debauch makes a great difference in the capacity of a man to climb or endure high altitudes. A soldier who could lift 5 kilogramme dumb-bells 104 times on Monte Rosa, after a drinking bout could only lift them 67 times and his pulse accelerated much more than when in good condition.

The observations of Zuntz and his co-workers show that the respiratory metabolism is increased from 15 to 30 per cent. in town dwellers while dwelling on the top of Monte Rosa. This increase is not due to cold, insolation, or light of the snowfields, for it persisted while the members of the expedition rested within the warm Alpine hut. Not only the resting metabolism but that during muscular exertion is increased. The metabolism in walking on the level snow-covered ground was contrasted with walking under similar conditions in Vienna.

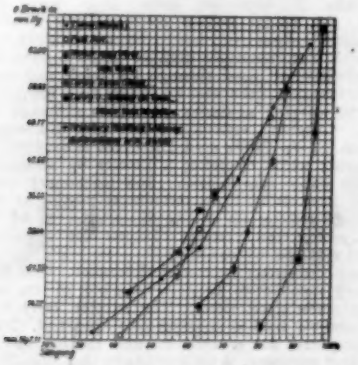
The increased metabolism did not come on until the second day after reaching the Monte Rosa hut. This delay explains why a similar increase has not been observed in pneumatic chamber experiments (Löwy) or balloon expeditions (Zuntz and Schrötter). Part of this increased metabolism may be attributed to the increased respiratory work and the greater rapidity of the circulation. Part is probably due to nervous exaltation produced by the strange surroundings and bracing air. The high electrical potential of the air on mountain peaks has been considered as a possible cause but without the production of definite evidence. Alpine soldiers showed no increased CO_2 output on Monte Rosa (Mosso).

By lower oxygen tension than 6 to 7 per cent. of an atmosphere the metabolism becomes deranged as evidenced by rise of respiratory quotient, appearance of lactic and oxalic acids in the urine (Terray), increased nitrogen output (Fraenkel and Geppert), and fatty degeneration of organs. Death quickly occurs when the oxygen tension falls to 3 to 4 per cent. of an atmosphere. Diminution of the barometric pressure

[1] The lecture will appear in extenso in a book entitled "Recent Advances in Physiology." By various authors. Publisher, Edward Arnold.

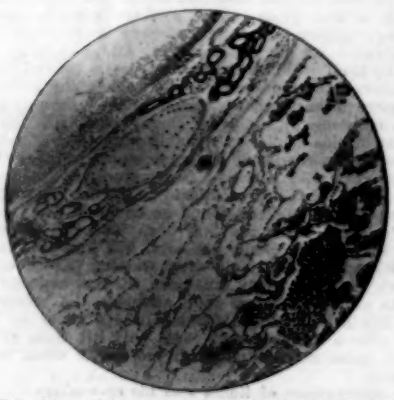
has no mechanical effect on the circulation (Fraenkel and Geppert). The pulse is always accelerated in high altitudes and irregular rhythm of respiration or Cheyne Stokes respiration often occurs on resting or sleeping. The latter is probably due to the diminished alveolar tension of CO_2, which is the prime regulator of the rhythm of respiration (Haldane). Pembrey has found that Cheyne Stokes respiration can be abolished by increasing the percentage of CO_2 in the respired air. The blood counts are increased by short exposures to low barometric pressures owing to congestion of the blood in the peripheral parts and increased concentration produced by transudation of plasma. The increase is not found in blood taken from the arteries. Exposure for many days causes increased formation of hæmoglobin; the percentage of iron in the liver diminishes and that in the blood rises. The inhabitants of the lofty Peruvian plateaux are stated to have a million or two more corpuscles per cubic millimetre than dwellers on the plains (Viault). The therapeutic effect of mountain climate depends on the purity of the air, its freedom from dust and bacteria; on the bracing cold and intense insolation; on the strengthening of the heart and respiratory mechanism; on the increased formation of hæmoglobin; and on increased respiratory metabolism.

FIG. 1.



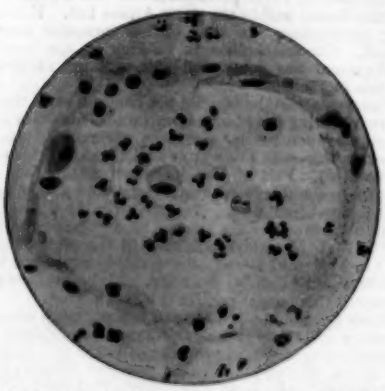
The curves of dissociation of oxygen. Contrast Löwy's curve with that of Hufner.

FIG. 2.



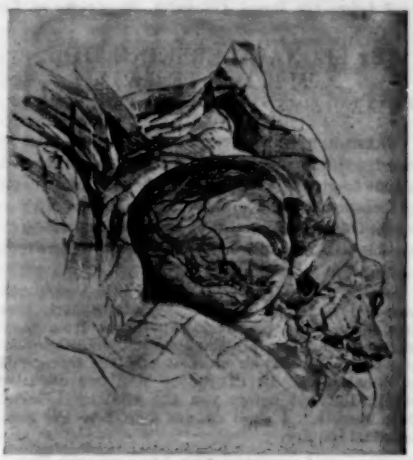
Wall of bronchial tube and alveoli showing inflammatory exudation following exposure to two atmospheres O_2.

FIG. 3.



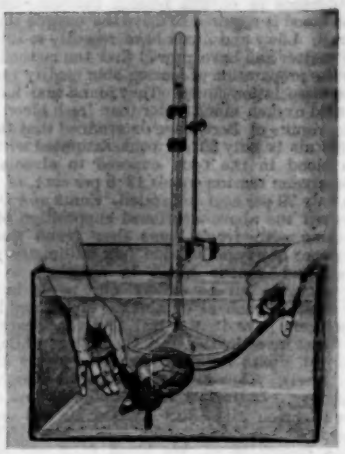
Alveolus under high power showing polymorpho-nuclear leucocytes and shed alveolar cells.

FIG. 4.



The heart from a dog rapidly decompressed showing its distension with gas and bubbles in the coronary vessels (Schrötter).

FIG. 5.



The method of extracting the gas from the heart for analysis (Schrötter).

THE EFFECT OF COMPRESSED AIR. CAISSON SICKNESS AND DIVERS' PALSY.

The rate of metabolism of an animal cannot, like a fire,

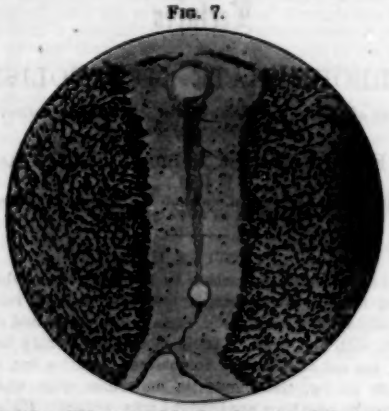
accelerated by increasing the supply of oxygen (Pflüger). The researches of Regnault, Hermann and Lehmann, Terray, and Löwy have recently been confirmed by Durig who has used the most exact methods of experiment. He finds that oxygen tensions varying between 11 per cent. and 94 per cent. of an atmosphere have not the slightest effect on the respiratory exchange of man. The inhalation of oxygen or exposure to compressed air cannot, therefore, be used as a therapeutic agent to increase the normal rate of metabolism. Cases of dyspnœa where the oxygen in the blood is deficient and the tissues are suffering from oxygen hunger may, of course, be benefited.

FIG. 6.

Gas bubbles in the capillaries of the spinal cord (Schrötter).

The continued action of oxygen above 100 per cent. of an atmosphere acts as a protoplasmic poison. It produces inflammation of the lungs (Lorrain Smith, Hill, and Macleod), depresses the CO_2 output, and lowers the body temperature. Haldane and Lorrain Smith, from experiments on the comparative absorption of O_2 and CO (mixed in known proportions) by shed blood and blood in the living animal have concluded that the lung has the power of actively absorbing oxygen and of forcing it into the blood

FIG. 7.

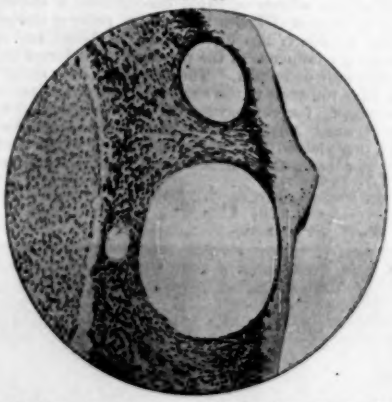


Gas bubbles within a vessel in the pia mater of the brain. The corpuscles are driven within the middle part of this vessel and a bubble appears at either end.

at a tension higher than that in the alveolar air. This power Lorrain Smith finds is abrogated by exposure to oxygen tensions of 170 to 180 per cent. of an atmosphere.

The lungs after exposure to high pressure oxygen show congestion of the alveolar capillaries, hæmorrhagic exudation, and consolidation. The pneumonia is patchy if quickly and universal if slowly developed. It requires about 24 hours at eight atmospheres of air (= oxygen 168 per cent. of an atmosphere) to produce marked pulmonary congestion. In animals that survived three days the alveoli and bronchioles showed an exudation containing numberless polymorphonuclear leucocytes, cocci in abundance, and shed alveolar cells (Bulloch and Hill). The use of oxygen inhalations in pneumonia thus finds little scientific evidence in its favour. The epithelium of the swim-bladder of deep sea fish is immune to high pressures of oxygen. The "red body" of the bladder secretes oxygen and in a fish caught at 4500 feet depth the tension of oxygen must have equalled 127 atmospheres. This shows that protoplasm can adapt itself to

FIG. 8.

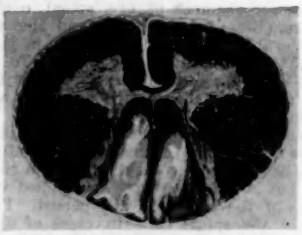


Gas bubbles within the cortex of the cerebrum compressing and flattening the surrounding nerve cells.

withstand an enormously high pressure of oxygen, just as it can be evolved to withstand a temperature of 70° C. or the high percentage of salts in the Dead Sea.

The muscle and heart and nerves of the frog survive exposure to from 50 to 60 atmospheres O_2 for an hour or even longer. The heart beats become gradually weaker and the muscle curve resembles that of fatigue. All terrestrial animals are instantly thrown into convulsions resembling those of acute asphyxia by exposure to from 50 to 60 atmospheres O_2. Exposure of mammals to from three to five atmospheres O_2 produces in from 10 to 20 minutes tetanic convulsions of great severity and, finally, a dyspnœic type of respiration, coma, and death (Bert, L. Smith, Hill and Macleod).

FIG. 9.



Lesion produced by gas bubbles in the spinal cord of a diver who was stricken with paraplegia after ascending from a depth of 40 metres (130 feet; five atmospheres) (Schrötter).

Analyses of the blood gases show that nitrogen is absorbed by the blood of an animal exposed to compressed air according to the law of partial pressures (Bert, Schrötter, Hill and Macleod). Under one atmosphere 100 cubic centimetres of blood dissolve 1·23 cubic centimetres of N_2; under four atmospheres 4·92 cubic centimetres of N_2. The same blood gives up 3·69 cubic centimetres of N_2 when decompressed from four atmospheres to one atmosphere. The whole blood in the body of a man weighing 70 kilogrammes would give up about 130 cubic centimetres of N_2. His tissue fluids would yield ten times as much.

The study of the circulation has been carried out by recording manometers placed within the pressure chamber or by microscopical examination of the web of the frog's foot stretched over the window of the chamber. The observations so made show that the compressed air has no mechanical effect on the circulation. The pressure is instantly and equally transmitted to all parts of the body by the fluids of the body. All mechanical congestion theories of the cause of caisson sickness are therefore erroneous (Hill and Macleod). In the case of divers and caisson workers every ten metres of water depth equal one atmosphere. A man working at a depth of 100 feet is exposed to about four atmospheres of air pressure. The study of the effects of rapid decompression shows that the cause of caisson sickness and divers' palsy is the setting free of the air which has dissolved in the blood and tissue fluids under the influence of the pressure. This forms bubbles and produces air embolism. The symptoms only occur after the men have returned to the surface. The gas so set free is chiefly nitrogen, for the oxygen is quickly absorbed by the blood and tissues. Analysis of the gas obtained from the right heart of a dog yielded 15·2 per cent. CO_2, 82·8 per cent. N_2, and 2·0 per cent. O_2. This animal was instantaneously

FIG. 10.

The lesion seen under a high power showing the necrosis of the nervous tissue (Schrötter).

decompressed by the bursting of the chamber. Enormous subcutaneous emphysema was found with gas in the stomach, omentum, anterior chamber of eye, spinal cord, cerebro-spinal fluid, &c. (Bert, Schrötter, Hill and Macleod). The formation of the air bubbles can be observed in the capillary circulation of the web of the frog's feet. To watch the bubbles of air scurrying through the capillaries first one or two and then many until the vessel is filled with air is one of the most interesting sights I have ever witnessed.

Recompression drives the gas bubbles again into solution and allows the circulation to recommence. Similarly recompression can be applied in cases of caisson sickness and divers' palsy but it must obviously be applied very rapidly or the effects of the ischæmia will persist. Post-mortem examination of the spinal cord in cases of divers' palsy shows the existence of necrotic patches surrounding the spaces in which air-bubbles collected after decompression (Catsaras, Schrötter). Recompression chambers have been used with advantage in some caisson works (Moir, Schrötter). Gradual decompression allows the dissolved gas to escape from the lungs and prevents the formation of bubbles in the blood. By making, therefore, the period of decompression last one hour, or for very deep work two hours, all caisson workers and divers can be entirely relieved from the risks of paralysis or death.

I have, with Messrs. Siebe and Gorman's coöperation, designed a diving-bell into which divers can enter and inclose themselves after completion of their work. Hoisted on to deck in this bell they can be slowly decompressed. The use of this bell will allow divers safely to reach greater depths than at present. Caisson works must necessarily possess an air-lock in which the men are compressed or decompressed on entering or leaving the works. The times of decompression used by engineers are at present far too short. Five, or at most ten minutes, is the period commonly used. Knowing as we now do the cause of caisson sickness the responsibility of preventing such sickness should be thrown upon the contractors of caisson works.

Oxygen gas might be used to replace the air in the air-lock so as to wash the nitrogen out of the tissue fluids and blood. This would allow the period of decompression to be greatly accelerated, for owing to the oxygen-carrying power of the blood there is little danger of oxygen bubbles producing embolism (Schrötter, Hill and Ham). Against this practice, however, is to be put the toxic action of high pressure oxygen on the lungs and central nervous system. It would not be safe to expose a man to three atmospheres of oxygen for more than a few minutes.

Stress has been laid by Snell on the importance of the CO_2 tension in the air breathed by caisson workers. He says that in the caissons of the Blackwall Tunnel an increase of CO_2 tension of 0·1 per cent. of an atmosphere produced caisson sickness and that thorough ventilation proved effectual as a preventive means. C. Ham and I have recently investigated this matter. A tension of CO_2 of 4 per cent. of an atmosphere, as is well known, produces marked dyspnœa. This, we find, is so whether an animal be exposed to one or to several atmospheres of air. We enclosed a cat in the chamber without supplying any ventilation and allowed the percentage of CO_2 to reach 4 per cent. We then raised the air pressure in the chamber to four atmospheres; the CO_2 percentage (obtained by analysis of the air drawn from the chamber) fell to 1 but the tension (1 × 4) remained the same and so did the signs of dyspnœa. We then allowed three atmospheres of air to escape; three-quarters of the CO_2 thus escaped, the tension of CO_2 fell to 1, and the dyspnœa ceased. Such high tensions of CO_2 as from 1 to 4 per cent. seemed to have no influence on the danger of decompression. The effect of bad ventilation in caissons may possibly be due to CO arising from flare lights or to H_2S arising from the soil. Any factor which leads to exhaustion of the worker, such as overheated air saturated with moisture, must increase the danger of rapid decompression by lowering the efficiency of the pulmonary ventilation.

In carrying out our researches Professor Macleod and myself have been greatly indebted to Messrs. Siebe and Gorman, who have given us the use of air pumps and chambers and the benefit of their unequalled experience as submarine engineers.

Lectures
ON
CARBOHYDRATE METABOLISM.

A Course of Advanced Lectures in Physiology, delivered at the University of London,

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LECTURE II.[1]

GENTLEMEN,—The deduction to be drawn from what has preceded is that saccharose, lactose, and maltose, reaching the circulatory system as such, remain untouched and simply filter off with the urine. Their molecules, it may be considered, are not of a nature to possess attraction for, and to be taken on by, the bioplastic molecules with which in the circumstances they are brought into contact. Galactose, lævulose, and dextrose, on the other hand, must be regarded as possessing an affinity for bioplasm which renders them susceptible when similarly placed of being to a greater or less extent assimilated or taken on by it instead of being wholly rejected. Although thus much is permitted to be said, yet the experimental evidence which has been adduced shows that the conditions existing only lead to a more or less tardy and incomplete assimilation, whence it arises that

[1] Lecture I. was published in THE LANCET of June 24th, 1905, p. 1704.

even in the case of dextrose, the most assimilable of the three sugars, a certain amount of escape occurs with the urine.

The experiments with the injection of a quarter of a gramme of dextrose per kilogramme are instructive upon this point. The blood from the instantly killed animal gave the figures 2·400 per 1000 before and 2·660 per 1000 after hydrolysis; that from the animal killed five minutes after, 2·333 and 2·910 per 1000; and from the animal killed at the end of 15 minutes, 1·430 and 2·040 per 1000. With the introduction of even so small an amount as $\frac{1}{75}\frac{1}{0}$th of the body weight, after the lapse of a quarter of an hour the blood had not returned to its normal condition but the sugar present in it had a lower cupric oxide reducing power than it had at first. In the case of the animals that were allowed to live for 60 minutes after the injection the blood also showed in an unmistakeable manner the existence of a larger amount of sugar than is normally present. From this it follows that when sugar reaches the circulation instead of being at once appropriated it only makes a tardy disappearance and during this time its presence is being revealed by the state of the urine. Looking at the table showing the condition of the urine secreted during the 60 minutes the amount of sugar is seen to stand definitely higher than in normal circumstances. In one instance the figures stood at 12·56 per 1000 before and 18·20 per 1000 after hydrolysis. There was an instance in which the figures stood at 2·28 and 5·67 per 1000, which is in conformity with the normal, but here there was quite an exceptional flow of urine, and reckoning for outflow and proportionate amount present the quantity of sugar found constituted 11·3 per cent. of that injected. Some of this would be naturally due to normal sugar elimination.

Instructive results were likewise given by the one gramme per kilogramme subcutaneous injections. Here the dextrose would only be gradually absorbed and even at the end of two hours, when the animals were killed, examination of the subcutaneous tissue at the seat of injection showed that marked sugar impregnation still existed. The blood at the time named gave a distinctly higher indication of sugar than is normally found. The urine varied considerably, which is not surprising, as there are many factors that influence the secreting activity of the kidney. Where large quantities of sugar are eliminated the diuresis evoked forces elimination, but in contrary circumstances through inactivity of the kidney only a restricted outflow may occur. To quote the highest sets of figures obtained before and after hydrolysis they ran as follows: 11·20 and 22·40 per 1000, 16·30 and 22·80, 13·60 and 24·00, and 12·38 and 25·60.

I consider that the evidence supplied by the line of research to which I have just been referring unequivocally shows that sugar reaching the circulation cannot escape filtering off with the urine on passing through the kidney, and yet it is contended that the carbohydrate of our food finds its way through the circulatory system in the form of sugar to the tissues for consumption. If this really occurred it could not fail to be attended with glycosuria. Undoubtedly the carbohydrate must in some way or other reach the tissues for it is here where utilisation of it occurs. The information supplied by the respiratory quotient affords evidence of the carbohydrate of the food actually reaching the seat of utilisation in the tissues. With carbohydrate matter consisting of carbon and of hydrogen and oxygen in the proportion to form water there is only the carbon free for oxidation and the oxygen utilised gives rise to an equal volume of carbon dioxide. Thus, if carbohydrate were the only material oxidised the intake of oxygen and the output of carbon dioxide would stand equivalent. In the case of fat and proteid there are other elements to undergo oxidation and thus a portion of the intake of oxygen will be applied to this purpose and render the output of carbon dioxide proportionately less. Now, observation shows that the larger the amount of carbohydrate entering into the constitution of the food the nearer, in accordance with the principle expounded, does the respiratory quotient approximate to the unity point.

From these considerations the difficulty has to be faced that the carbohydrate of the food has to reach the tissues and that if it passed, as has hitherto been taught, through the circulatory system in the form of sugar it would flow off with the urine as it does in diabetes. Let us suppose for a moment that the food carbohydrate really took the course that has been mentioned. Could this possibly occur without any indication of it being afforded by the state of the blood and the urine? We have seen that no definite relationship is to be traced in the healthy animal between the food and the state of the blood and urine. It is true that the amount of blood sugar came out rather higher for the rabbit than for the cat, the mean of the observations recorded being 1·089 per 1000 before hydrolysis and 1·495 per 1000 after for the one against 0·880 and 1·140 per 1000 for the other; but in the case of both animals the figures stood decidedly higher for the thoroughly fasting than for the fed state, being 1·21 per 1000 before hydrolysis and 1·64 per 1000 after for the rabbit and 1·10 and 1·15 per 1000 for the cat. As regards the urine the same order occurred in the fed state as was noticeable for the blood, the figures being 3·69 per 1000 before and 7·03 per 1000 after hydrolysis for the rabbit and 2·75 and 5·87 per 1000 for the cat. In the fasting state the urinary figures were 2·23 per 1000 before and 4·80 per 1000 after hydrolysis for the rabbit and 4·19 and 8·65 per 1000 for the cat.

Without any food, then, to supply sugar for transit through the circulation the amount of sugar in the blood is seen to be higher than when food was being taken. There is much variation in our own food at different times, but the urine reveals nothing to show it. Voit gives as a normal daily diet for man 118 grammes of proteid, 56 grammes of fat, and 500 grammes of carbohydrate. The urine with this diet gives no further evidence of the presence of sugar than after animal food or no food at all. Can the 500 grammes of carbohydrate pass through the circulatory system to the tissues in the form of free sugar without affording evidence of its doing so through the medium of the urine? We have seen from the experiments with the intravenous injection of a quarter of a gramme of dextrose per kilogramme how sensitive the urine is to the presence of sugar in the blood, and surely the transit of 500 grammes per diem in the human subject from the food ought not to leave the urine in the same state as when there is no food carbohydrate passing, as would happen in a day of fasting. I am not oblivious of the alleged glycogenic function of the liver, but if the liver detained the carbohydrate and subsequently gave it out as sugar this would not prevent the system from being, at some time or other, traversed by the sugar, with the result of a proportionate appearance of sugar in the urine.

It is necessary for service in the economy that the food carbohydrate should reach the tissues, but the transport must be in some other way than as free sugar in the blood, seeing that sugar passing to the tissues would at the same time pass to the kidney and filter off with the urine as it does in diabetes. If sugar entered the blood nothing short of immediate assimilation by it would suffice to prevent the kidney being reached, but assimilation is looked upon as taking place in the tissues and this involves passage of sugar through the circulation.

I do not think the distinction between assimilation and utilisation is kept as clear as it should be. Often it seems as if from the manner in which the word assimilation is used that it implied utilisation. In reality it only implies a taking into, and incorporation with, the material that performs the assimilative duty. Utilisation is a subsequent process and it need not necessarily take place immediately. The one is a process of synthesis which has come to be regarded as dominated by enzyme action, for to enzyme action is now assigned the office of governing factor of building up as well as of breaking down; the other is a process of breaking down with which oxidation is associated. Both the material to be oxidised and the oxidising agent enter the molecular complex within which the oxidation occurs, not presumably in a direct manner by one step but by successive steps of degradation with the formation of various intermediate products before carbon dioxide, water, and ammonia are reached.

It may be said, therefore, that both oxygen and the material to be oxidised are assimilated by the bioplastic molecule within which they constitute the basis for metabolic action. Evidence is afforded of oxygen being taken and stored up by the molecule, in a form to be ready for use when required, by the increase of weight that has been observed to occur in a marmot during profound hibernation and by the discharge of carbon dioxide that has been noticed to persist for some time from a frog placed in an atmosphere of nitrogen and therefore cut off from obtaining an intake of oxygen. Without the storage to some extent of both foodstuff and oxygen by assimilation or incorporation into the molecule there would be no provision for stability of molecular action.

Seeing that the requirement exists for the carbohydrate of the food to reach the tissues where utilisation occurs and that it is incompatible with the circumstances that present themselves for it to pass through the circulatory system as free sugar we are faced with the problem of how the transport is in reality made. This is the matter to which I will now proceed to direct attention and I think it will be found that an explanation can be given which satisfactorily meets all the circumstances.

It has long been known in connexion with the vegetable kingdom that a class of bodies exists into which carbohydrate enters as a component part. The bodies are called glucosides and with the advance of chemical knowledge they have been found to constitute a very numerous and widely distributed group. By chemical means the carbohydrate can be recovered from them, but in the characters they possess there is nothing for a moment suggestive of its presence, so completely does the carbohydrate lose its identity. Until recently it has not been surmised that a similar state of things holds good in connexion with products from the animal kingdom. Landwehr at the commencement of the 1880–90 decade obtained a carbohydrate from mucin which he styled "animal gum." He invested the product with a variety of visionary attributes but did not concern himself about it as a constituent of the parent substance. In the early part of the following decade, whilst engaged in the pursuit of my investigations upon the relations of sugar in the animal system, I came across evidence pointing to proteid matter in connexion both with the animal and vegetable kingdoms being of a glucoside nature. The matter was dealt with in my "Physiology of the Carbohydrates," published in 1894, having previously formed the subject of a communication entitled, "On the Glucoside Constitution of Proteid Matter," presented to the Royal Society in the preceding year.

By the research conducted it was shown that carbohydrate was susceptible of being obtained from proteid by the breaking-down action of both potash and sulphuric acid, the product in the former case presenting itself in the amylose form and in the latter as sugar. A demonstration was afforded through the medium of the several distinguishing properties observed that the product obtained was in reality of a carbohydrate nature. The albumin and vitellin of the egg, the proteids of the blood serum, and fibrin from the animal kingdom; and from the vegetable kingdom, gluten from wheat flour, and the proteid of the haricot bean were found to yield cleavage carbohydrate. None was obtainable from gelatin and only an insignificant amount from casein. To begin with, as is not unusual in like circumstances, dissent was raised to the proposition I had put forward but I think it may be taken to be now generally accepted. Indeed, gluco-proteid is a term that is found to have fallen into general use.

It was not the mere chemical fact of carbohydrate being a component of proteid that constituted the point of interest to me. I saw in it a bearing of deep physiological importance in connexion with the application of carbohydrate within the animal economy and it was this that riveted my attention to the matter. I knew that carbohydrate underwent utilisation in the tissues and that a means of transport for it from the alimentary canal must exist that would not permit of its filtering off with the urine. The entry of carbohydrate into the construction of the proteid molecule I could see provided what was wanted and gave the clue to the solution of the difficult problem that had hitherto faced us. Locked up in proteid, carbohydrate is in a safe position for escape from being discharged with the urine, on account of the proteid molecule being too large to pass off by filtration.

The importance of the subject has prompted me to return to it and to conduct further work in connexion with it. This I have been lately carrying out in the physiological laboratory of the University of London, where I have found every facility provided to aid its prosecution. The work has branched out into collateral channels and has called for a considerable amount of steady labour in which I have received the able and zealous help of my assistant, Mr. H. W. Bywaters. The first point to be dealt with is the presence of carbohydrate as a component part of different animal proteids. I will afterwards give attention to the physiological bearings belonging to the information that has been experimentally obtained. It will be understood that we shall be now looking at carbohydrate matter from an opposite point of view to that from which it has hitherto been commonly regarded—namely, as proceeding in the building up or anabolic instead of the breaking down or katabolic direction.

It is the locked-up carbohydrate that has to be searched for and the combination has to be broken down before any information can be obtained. After the carbohydrate has been set free the next step is to place it in a position to be susceptible not merely of recognition but of quantitative determination. It is brought to the state of sugar for the attainment of the object in view and in order that the sugar may be satisfactorily estimated there must be nothing finally present to interfere with the application of the ammoniated cupric test. I have now had much experience in connexion with this matter and consider that with careful manipulation trustworthy results are obtainable. For years past I have been in the habit in blood examinations of estimating the amylose (proteid) carbohydrate as well as the sugar, and in my "Physiology of the Carbohydrates" I made special allusion to the fact of an increase being observable as an accompaniment of the presence of an excess of sugar, looking as though a portion of the sugar had passed into an assimilated state whilst in the blood.

The proteid carbohydrate may be separated by the breaking-down agency of potash and by that of hydrochloric acid. With the ordinary proteids the results given by the two processes on subsequent estimation fairly agree. In the case of the mucoids, however, there is great disparity and the information supplied points suggestively to the existence of a certain constitution of the molecule. Something requires to be said regarding the method of procedure for estimating the amount of proteid carbohydrate present in different circumstances, as the matter is related to a line of investigation which seems to me to have a promising character and which as yet has not been touched by others and is therefore not to be found referred to in books.

Estimation of Proteid Carbohydrate by the Potash Process.

When liquid blood is the material to be analysed about 30 grammes is a convenient quantity to employ. After being weighed out into a 400-cubic centimetre flask, it is treated with a potash solution so as to give to the mixture a 10 per cent. strength. In the case of the solid proteids from one and a half to two grammes and of dried blood three grammes may be taken. After thorough drying the material requires to be brought to a minutely divided state in order to secure full action of the chemical agent, which is an essential point. The reduction is effected by rubbing down in a mortar and passing through a fine metallic gauze sieve (90 to the linear inch). The weighed product is next treated with about 35 cubic centimetres of a 10 per cent. potash solution and subjected to boiling for half an hour under a reflux condenser in a flask of about 400 cubic centimetres capacity which provides against the inconvenience arising from the foaming that occurs. The contents of the flask are now poured into ten volumes of methylated spirit (95 per cent.) contained in a tall beaker and the flask is rinsed out with more spirit. The beaker is allowed to stand till the following day for the precipitate to settle. Filtration is next performed through asbestos arranged in a Gooch's perforated porcelain crucible adapted to an exhausting filter pump. Much time is saved by decanting the clear liquid and filtering this first, as the precipitate, on being poured on to the filter, clogs it and impedes filtration. After washing with spirit the next step is to subject the precipitate, which contains the proteid carbohydrate in the amylose form, to the hydrolysing influence of a boiling mineral acid. Hydrochloric acid of 5 per cent. strength is used for this purpose. The precipitate is washed with the hot acid, which dissolves it, from the asbestos plug in the crucible into the beaker originally used for precipitation, the last traces being removed by repeatedly pressing out the liquid from the asbestos by squeezing it with a glass rod against the side of the crucible. After heating the acid solution in the beaker to the boiling point to get rid of the adhering traces of spirit the liquid is transferred to a small flask (about 150 cubic centimetres) into which the washings of the beaker are also poured. The contents of the flask, measuring about 50 cubic centimetres, are next boiled for one and a half hours under a reflux condenser. When cold the liquid is nearly neutralised with potash, clarified by boiling with hydrated alumina[1] made to 75 cubic centimetres and thrown on to a dry filter. The filtrate is rendered faintly alkaline by the addition of a drop or two of strong alkali, filtered from any slight precipitate, and

[1] Vide Pavy: The Quantitative Estimation of Sugar in Blood, Journal of Physiology, vol. xx., 1896.

titrated with the ammoniated cupric test. The liquid for titration should be of a pale sherry colour and should give no biuret reaction on being titrated. Summarily stated the process consists of breaking down the proteid with potash, precipitating the liberated amylose carbohydrate by means of spirit, converting into sugar, and estimating this in the usual way.

Estimation of Proteid Carbohydrate by the Hydrochloric Acid Process.

In the potash process when blood is taken it is not essential that it should be first of all treated with spirit to remove the sugar as the potash exerts a destructive action upon it and in this way gets rid of it. Such is not the case with the acid process and before treatment with the acid the removal of the sugar present must be effected. The blood (say 30 grammes) should be extracted and washed with methylated spirit with the use of a press as in the process adopted for the quantitative determination of sugar in blood. The coagulated mass obtained is treated with strong hydrochloric acid and allowed to stand overnight to become thoroughly liquefied, then diluted down to a 10 per cent. strength, having reckoned for 100 cubic centimetres volume as the quantity to work with, and afterwards boiled under a reflux condenser for one and a half hours. A dark-coloured liquid is obtained containing the nitrogenous products of disintegration as well as the sugar. The point now to be attained is to remove the nitrogenous products and to leave the sugar. Here a certain amount of difficulty is encountered on account of the soluble nature of the principles to be dealt with. Phosphotungstic acid is the best precipitant. A 20 per cent. solution is added till it no longer gives a precipitate. The resulting admixture is heated to boiling for the purpose of facilitating subsequent filtration by causing the precipitate to assume a more granular form. What is next wanted is to remove the phosphotungstate compound but as this is not completely insoluble, and particularly when hot, the process is more lengthy than it would otherwise be and at the same time steps must be taken to provide as far as possible against loss of sugar by its remaining attached to the precipitate. Hence filtrations (best on what is known as a glass filter plate), rubbing down in a mortar, and adequate washing are required to be performed. Subsequently the liquid obtained after being nearly neutralised with sodium hydrate is evaporated down over a water bath to a small bulk and allowed to stand overnight for settlement out to occur. Filtration is now conducted with asbestos, a Gooch crucible, and an exhausting pump, the washing being effected with a saturated solution of sodium chloride to prevent any phosphotungstate precipitate being taken up. The filtrate has now to be made slightly alkaline with sodium hydrate and as this is done a deep blue colour is developed. The colour that is developed might perhaps, without the employment of litmus or other such-like agent, suffice to indicate that alkalinity has been reached but in my own work it has not been relied upon for this purpose. On exposure to air the colour disappears and the disappearance is accelerated by passing air through the liquid. All that remains to be effected now is to bring to a known volume, as, for instance, 75 cubic centimetres, throw on to a dry filter, and titrate. When properly prepared the liquid is colourless and gives no biuret reaction on titration.

Having described the processes for quantitatively determining the proteid carbohydrate obtainable by the breaking-down action of potash and hydrochloric acid I will now proceed to deal with various products and to show how they stand under subjection to the treatment in question:—

Proteid Carbohydrate obtained by Cleavage with Potash and Hydrochloric Acid. (The figures in each case represent parts per 1000 with the carbohydrate expressed as glucose.)

Dried defibrinated blood (serum and corpuscles) from the horse.—The blood was defibrinated, poured into methylated spirit, the coagulum collected, pressed, washed with boiling spirit, dried, and powdered.

Cleavage by potash.	Cleavage by hydrochloric acid.
21·9	19·7
20·4	20·8
21·2	20·7

Dried plasma of horse's blood.—The blood on collection was treated with 1 per cent. strength of citrate of potash to prevent coagulation and centrifugalised. The plasma was afterwards dealt with in the manner described for the defibrinated blood.

Cleavage by potash.	Cleavage by hydrochloric acid.
25·8	25·4

Dried blood corpuscles.—The corpuscles were obtained by centrifugalising the citrated blood and washing with normal saline solution. They were then treated with spirit and subsequently prepared in the usual way. The first two sets of figures refer to horse's blood and the last two to cat's blood.

Cleavage by potash.	Cleavage by hydrochloric acid.
4·5	3·2
3·3	2·9
4·5	1·9
5·2	2·5

It is noticeable that the yield of proteid carbohydrate by the corpuscles is in striking contrast with that yielded by the other portions of the blood, the amount being quite of an insignificant character. It may be remarked with regard to the lower figures obtained after cleavage by hydrochloric acid in comparison with those after cleavage by potash that the bulky phosphotungstate precipitate, from the difficulty offered in thoroughly washing out the sugar, may have had something to answer for in connexion with the result. Looking at the relative yield from the defibrinated blood and plasma it is in accordance with what might be looked for in view of the presence of the corpuscles in the former and not in the latter case.

Serum globulin.—The colourless serum from horse's blood was treated with an equal volume of saturated ammonium sulphate solution. The precipitate was collected, treated with water to dissolve, and the globulin reprecipitated with ammonium sulphate. Water was again added to dissolve, and the globulin was now precipitated from the liquid by boiling. The coagulated globulin was afterwards washed with boiling water to remove the saline matter and then treated with boiling spirit. It was finally dried and powdered.

Cleavage by potash.	Cleavage by hydrochloric acid.
28·1	28·1
30·5	30·2

Serum albumin.—The filtrate from the serum globulin just dealt with was diluted with water and, after acidifying with acetic acid, heated to boiling. The coagulated albumin was collected, pressed, and adherent ammonium sulphate washed out with boiling water. After treatment with boiling spirit it was dried and powdered.

Cleavage by potash.	Cleavage by hydrochloric acid.
18·4	17·7
20·8	19·3

Globulin, it is thus seen, gives a higher yield of proteid carbohydrate than albumin, but this is all that can be said. Contrary therefore to a statement opposed to my original results, which I find is obtaining currency in print, albumin gives a notable yield.

Blood fibrin.—The clot from horse's blood was washed with water till practically colourless. It was then dehydrated with boiling spirit and afterwards dried and powdered:—

Cleavage by potash.	Cleavage by hydrochloric acid.
25·8	23·1

Egg Proteids.

The egg proteids, alike from the yelk and the white, do not materially differ as regards their yield of carbohydrate except in one instance—viz., ovomucoid, in which a very different state of things exists from that met with ordinarily. Not only in this instance is the yield of carbohydrate signally large but apparently it is derived from a double source—viz., from carbohydrate in the form of sugar as well as from carbohydrate in the amylose form. The matter will be subsequently discussed under the head of ovomucoid but I refer to it now as it probably affords the explanation of the difference in the results obtained from the crude material of the egg and the isolated proteid principles.

Crude egg yelk.—The egg yelk was treated with methylated spirit and the precipitate repeatedly boiled with fresh quantities of spirit with the view of getting rid of the major

portion of the fat. The yelks were not completely freed from adhering white which may possibly account for the higher figures after the acid cleavage.

Cleavage by potash.	Cleavage by hydrochloric acid.
27·0	32·7
25·3	29·9
26·7	31·9
27·9	30·7

Egg vitellin.—Egg yelk was treated with an equal volume of saturated ammonium sulphate solution so as to bring to a state of half saturation. After being allowed to stand for some hours to settle out the precipitate was collected and boiled up with spirit and this process again gone through. Finally, the precipitate was washed with boiling water and subsequently dealt with in the usual way.

Cleavage by potash.	Cleavage by hydrochloric acid.
32·1	30·7

A second specimen was prepared by extracting the egg yelk with ether to remove the fat, dissolving the residue in 10 per cent. sodium chloride solution, filtering, and precipitating the vitellin by diluting with water. The precipitate was collected, washed by decantation with water, then with boiling spirit, afterwards with boiling water, and finally again with spirit, after which it was dried and powdered.

Cleavage by potash.	Cleavage by hydrochloric acid.
29·6	25·6
30·0	27·7

Crude egg white.—Dry commercial egg albumin was dissolved in a small quantity of water and the proteids precipitated by the addition of methylated spirit. The precipitate was washed with boiling spirit and afterwards dried and powdered.

Cleavage by potash.	Cleavage by hydrochloric acid.
29·1	42·3
28·4	45·8

A second portion of the dry commercial egg albumin was dissolved in water, slightly acidified, and then boiled. The precipitate was collected, washed with boiling water, and afterwards dehydrated with spirit, dried, and powdered.

	Cleavage by potash.	Cleavage by hydrochloric acid.	
	27·9	44·6 42·6	Duplicates.
	28·0	44·8 43·6	Duplicates.

A third product was obtained from the whites of fresh eggs treated in the same way as the last.

Cleavage by potash.	Cleavage by hydrochloric acid.	
27·2	44·0 43·7	Duplicates.

It will be noted in all these instances that the yield from the acid cleavage is considerably higher than that from the potash. The presumable explanation is contamination with ovomucoid which, as will be subsequently seen, yields much higher figures with the acid than with the potash cleavage. In the first set of instances given ovomucoid would be evidently carried down, as it is precipitable, like albumin, with spirit.

Crystallised ovalbumin.—The whites of fresh eggs were beaten up and mixed with an equal bulk of saturated neutral ammonium sulphate solution. After standing about 12 hours the slight precipitate (globulin) produced was separated by filtration and saturated ammonium sulphate solution was added to the filtrate until a slight permanent precipitate was produced. This was dissolved by the addition of a few drops of water and then one-fifth normal sulphuric acid was pipetted in drop by drop until the solution was just opaque. After 24 hours the crystalline precipitate was filtered off and recrystallised by solution in water and treatment with ammonium sulphate and sulphuric acid. The recrystallised product was dissolved in a large quantity of water, acidified with acetic acid, and coagulated by boiling. The coagulated albumin was collected, washed with boiling water, then with boiling spirit, and afterwards dried and powdered. Two preparations were made and analysed.

	Cleavage by potash.	Cleavage by hydrochloric acid.	
(i.)	26·2	25·0	
(ii.)	23·5 22·5	25·7 24·8	Duplicates.

Conalbumin.—This name has been applied[3] to a form of albumin found in the mother liquid after the separation of the crystallised ovalbumin. It is present in conjunction with ovomucoid. From the filtrate obtained after the removal of the crystallised ovalbumin, the conalbumin and ovomucoid were salted out by the addition of solid ammonium sulphate. On redissolving in water, acidifying, and boiling, the conalbumin was coagulated, whilst the ovomucoid remained in solution. The conalbumin was collected, washed with boiling water, and subsequently with boiling spirit.

Cleavage by potash.	Cleavage by hydrochloric acid.
26·1 22·1 Duplicates.	34·1 36·9 Duplicates.

Ovomucoid.—The liquid from which the conalbumin had been separated by filtration was evaporated to dryness, whereby the ovomucoid was rendered gelatinous and insoluble in cold water. After repeatedly washing with cold water and boiling with spirit it was collected, dried, and powdered.

Cleavage by potash.	Cleavage by hydrochloric acid.
107·9	215·9

Ovomucoid obtained by another mode of preparation was also dealt with. Dry commercial egg albumin was dissolved in about 15 times its weight of water, acidified, and boiled in order to coagulate the albumin which was removed by filtration. From the clear filtrate evaporated on the water-bath to a small bulk the ovomucoid was precipitated by the addition of two volumes of methylated spirit. After washing repeatedly with boiling spirit it was collected, dried, and powdered.

	Cleavage by potash.	Cleavage by hydrochloric acid.
(i.)	59·1	150·9
	61·1	149·2
(ii.)	73·6	210·0
	43·9	133·0
(iii.)	42·6	134·7
	33·4	119·0

Other specimens of ovomucoid were prepared from the whites of fresh eggs instead of commercial egg albumin. Five different samples were obtained and submitted to examination.

	Cleavage by potash.	Cleavage by hydrochloric acid.
(i.)	79·8	186·0
	76·9	215·0
(ii.)	110·0	220·3
	140·4	227·0
(iii.)	128·0	246·0
	141·5	260·0
(iv.)	123·3	217·0
(v.)	144·9	256·8
	145·6	220·9
	188·3	231·0

Osseo- and tendo-mucoid.—In order to ascertain if other mucoids correspond with ovomucoid in the relative results given after cleavage by potash and by acid steps were taken to obtain specimens of osseomucoid and tendomucoid. The process is a tedious and lengthy one but specific directions have been given by Hawk and Gies[4] for osseomucoid and by Cutter and Gies[5] for tendomucoid and these were strictly followed. At first it appeared as if there would be a want of success in obtaining the products but by perseverance in adjusting the acid to the requisite point to produce their precipitation from the half-saturated lime-water extracts that had been previously made and allowing time for the gelatinous form of precipitate produced to settle out the difficulty disappeared. These were the results obtained on subjecting them to the potash and the acid processes of treatment.

Osseomucoid.

Cleavage by potash.	Cleavage by hydrochloric acid.
46·1	107·6

Tendomucoid.

Cleavage by potash.	Cleavage by hydrochloric acid.
32·9	116·2

[3] Osborne and Campbell: Journal of the American Chemical Society, vol. xxii., 1900.
[4] American Journal of Physiology, vol. v., 1901.
[5] Ibid., vol. vi., 1901-02.

The same order of figures, it is seen, are observable as for the ovomucoid but the proportionate amounts are less. It may be that this arises from the presence of incidental impurity.

Have we not something in these results which speaks suggestively upon the point of the molecular constitution existing? With ordinary proteids the figures, except in the instances where ovomucoid is liable to be present as an impurity, are practically about the same after the potash and the acid cleavage. This may be expected to be the case if the carbohydrate is present in the proteid molecule in the amylose form. In this form it is simply liberated without being destroyed by the boiling potash and after being hydrolysed by the acid treatment it is estimated as sugar. With the acid cleavage the amylose carbohydrate would at the time of cleavage be hydrolysed into sugar and thus present itself at once in the form of sugar. In the case of the mucoids the figures after the potash cleavage are seen to be conspicuously less than those obtained after cleavage by the acid. The proteid molecule is regarded as consisting of a central intrinsic part with side-chain attachments; and sugar side chains, I think, have been hinted at if they have not been shown to exist. The facts before us seem to me to be suggestive of sugar side chains being present in the case of mucoids. Should they be so they would be acted upon and destroyed by the potash and not by the acid on being cleaved off and thus the smaller potash yield becomes intelligible. After boiling with 2 instead of 10 per cent. potash a much larger yield of carbohydrate is obtained. This appears to arise from some of the mucoid escaping being broken down. Whatever does so would fall like amylose carbohydrate when poured into spirit and on subsequent boiling with the acid cleavage would occur with attendant appearance of sugar.

I have been speaking of the proof afforded, by the agency of chemical breaking down action, of the presence of carbohydrate as a constituent of proteid matter. I will now speak of the information supplied in connexion with this point through quite a different channel and one which bears on action occurring within the living system. Phloridzin, a crystalline principle obtainable from the bark of the stem and root of the cherry and some other allied trees, is known to produce a strongly glycosuric effect when introduced into the system either by the alimentary canal or by intravenous or subcutaneous injection. The glycosuria produced by it differs from the glycosuria arising from other causes in not being due to antecedent hyperglycæmia. In ordinary glycosuric conditions the sugar of the urine is derived from sugar existing in the blood and filtering off with the urine. They are thus associated with hyperglycæmia and this bears a proportionate relation to the sugar elimination. In phloridzin glycosuria, however, no such relationship exists. Indeed, it was said at one time that there was less sugar than normal to be found in the blood. This, as a matter of fact, is not true and the statement depended upon the defective mode of analysis adopted. Some years ago I gave careful attention to the matter and published my results in a communication "On Phloridzin Diabetes" contained in the *Journal of Physiology*.[6] It was there shown that the sugar almost invariably stood somewhat above the normal. I shall revert to this subject in speaking of the mechanism of phloridzin glycosuria and give an explanation of the condition observed.

After intravenous and subcutaneous injections the glycosuria follows very speedily and may be very intense. In one of my experiments the urine contained 112 per 1000 of sugar 2 hours and 25 minutes after a subcutaneous injection. The blood in this case only contained a trifling excess of sugar—a state that could not possibly account for the elimination that occurred. The effect only lasts whilst there is phloridzin present to exert an action, but it may be renewed by a fresh administration. The result occurs in the absence of food. Even after prolonged fasting glycosuria has been found to have been produced. Everything points to the kidney as being the seat not merely of elimination as in other forms of glycosuria but of the production of the sugar and from the work that has been undertaken a relation has been noticed to exist between the nitrogen and sugar discharged. In the fed animal with a store of glycogen in the liver and other parts of the body the sugar is in high and irregular proportion to the nitrogen but by starvation it becomes reduced and is ultimately brought to a constant ratio. At first there is a discharge of the loosely combined carbohydrate existing in the system and whilst this is going on the sugar elimination bears an uncertain relation to that of the nitrogen, but subsequently, when the carbohydrate referred to has been swept away, the two become drawn from proteid disintegration and now the period of fixed relationship is reached. Assuming that this point has been arrived at and that the source of both the sugar and the nitrogen is the disintegrating proteid molecule the relationship between the two ought to afford a basis for calculating the proportionate yield of sugar by it. The nitrogen eliminated corresponds with a given amount of proteid disintegrated. In the dog when the condition is brought to proteid as the only source of the sugar and nitrogen eliminated the relation has been stated to stand at 3·8 of the former to 1 of the latter and upon this relationship the amount of sugar yielded works out at about 60 per cent. of the proteid disintegrated. The ratio of 2·8 to 1 has been more recently asserted[7] to constitute the correct D : N value. Calculating upon this basis the percentage of carbohydrate in proteid stands at about 44 instead of 60. Such is the proposition that has been advanced and it gives a vastly greater carbohydrate component part in the proteid molecule than is given by chemical destructive action. It is evident, however, that the conditions under which cleavage occurs are essentially different in the two cases, seeing that in the one the carbohydrate simply comes straight off, whilst in the other the opportunity exists for the occurrence of intra-molecular action. When carbohydrate enters a molecule rearrangements ensue and it may temporarily assume another grouping. There is abundant evidence to show that carbohydrate may enter a molecule and through re-groupings within may come out in the form of fat, and conversely fat may enter and carbohydrate be split off.

Up to the present I have been looking at the evidence in support of carbohydrate entering into the constitution of proteid from the side of cleavage action. There is another aspect, however, from which the matter may be regarded and this is from the side of construction.

A single instance may be taken to suffice for showing that carbohydrate is susceptible of being built into proteid. Yeast cells may be regarded as little masses of bioplasm and we only know of bioplasm in connexion with proteid as a basis. Placed in a nutrient medium the bioplasm grows and forms fresh bioplasm by incorporating into itself the molecules with which it is adapted to unite. Pasteur showed that yeast cells would grow, which means would form proteid, in a medium consisting of sugar, ammonium tartrate, the ash of yeast, and water. It may reasonably be here inferred that the sugar contributes to the formation of the proteid but no absolute proof of it is afforded seeing that the elements of the sugar—carbon, hydrogen, and oxygen—are also present in the ammonium tartrate. Ammonium nitrate, it has been found, may be substituted for the ammonium tartrate and when this is done the only source for the carbon entering into the constitution of the proteid is from the carbon existing in the sugar. Thus proof is furnished of sugar being turned to account in connexion with the construction of proteid. The other line of evidence adduced showed that carbohydrate, actually as such, enters as a component part into the proteid molecule. In my next lecture I shall deal with the conclusions to be drawn from a review of the knowledge that is now before us.

[6] Journal of Physiology, vol. xx., 1896.

[7] Stiles and Lusk: American Journal of Physiology, vol. x., 1903.

THE VEGETARIAN CONGRESS.—From June 22nd to 24th the International Vegetarian Congress, convened by the Vegetarian Federal Union, was held at the Memorial Hall, Farringdon-street, London, when delegates were present from many parts of the world. Among the matters discussed were diet and physical deterioration, the selection and cooking of vegetables, and the ethical aspect of the movement. On the evening of the opening day a dinner consisting of 15 courses was held at the Holborn Restaurant, the object, apart from its social bearing, being to show the wide scope which vegetables offer for a variety of tasteful and nourishing dishes when combined with eggs, milk, butter, and cheese. On the whole, the tone of many of the speakers during the congress was less aggressive than is usual, but the spirit of antagonism to those who did not hold the same views as themselves was very obvious in some speakers.

The Cavendish Lecture
ON
DISEASE OF THE HEART.

Delivered before the West London Medico-Chirurgical Society on June 23rd, 1905,

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MR. PRESIDENT AND GENTLEMEN,—Destitute as I was when I received the invitation of your council of any idea of a subject in which to interest you for an hour to-night I turned to the titles of some of the former lectures and from them I gathered that all had been strictly clinical in their material and scope and so I determined that mine should be. The one that I have selected, "Disease of the Heart," seems rather a large order, as your secretary remarked, for a short hour but I may at once relieve your minds by saying that this is entirely due to a struggle with my title in which I was mastered and my purpose would, I think, be better expressed if without prejudice I might be allowed to put it in conundrum fashion, When is disease *not* disease? With this aim I shall have to speak of such commonplace subjects as the meaning of what are called functional murmurs, the position of the impulse and its indications, præcordial dulness, such departures from the normal action as intermission, palpitation, tachycardia, and bradycardia, and the bearing of some of these on the diagnosis and treatment of actual disease.

My subject having based itself upon my desire to be on common ground with every one of you I have confined myself almost exclusively to my own observations. I suppose I can hardly be accused of egotism if I assume that I should not have been asked to address a body of experienced men such as are here to-night if it had not been thought that the decades that bring me in sight of artificial teeth and gout waters, face massage, and other devices for postponing age, bring also a right to an opinion of my own, and that this opinion you want to hear. I am but re-telling a well-worn story that others have better told before, but from time to time it needs re-telling, particularly if the opinions are independently your own.

And, first, those murmurs with which I shall concern myself are all systolic. Many are basal, and of these some are over the aortic valves but more over the pulmonary and extending over the right ventricle and towards the apex. Some are loudest in the mitral area and when so they have a tendency, like the basal murmurs, to diffuse themselves in this case upwards round the nipple, to join the basal one, and the two often existing together the one merges into the other and it is difficult indeed to say if there be one murmur or two. Very often, however, there is a purely apical murmur which is heard in a series of separate whiffs or is intensified in whiffs. And these are clearly associated with inspiration. Two or three come in each inspiration as it rises to its acme and then cease again and these may be quite well heard at the angle of the scapula. They are most marked when the patient is nervous under examination and the heart more or less quickened. The murmur most probably *disappears* as the heart quiets down and in all cases it is then much diminished. In similar circumstances there often occur impurities of sound rather than definite murmurs; the first sound loses its cleanness and is converted into a murmurous or humming, or groaning or grunting prolongation, this being confined almost exclusively to the position of the impulse.

Lastly, and perhaps most common of all, there is another murmur, or the same murmur under a different aspect, again systolic and apical, but curving round it upwards towards the base and which has this peculiarity, that it is only brought out by making the patient lie down. The heart sounds, when examined with the patient standing or even sitting, are absolutely healthy, but put the patient on a couch and a more or less well-marked, often quite loud, systolic souffle, in character like that of mitral regurgitation, is developed round the apex. If a somewhat prolonged observation is made it will be found that the murmur varies considerably in intensity at different beats and tends on the whole to disappear after the position assumed has been maintained for some few seconds, or perhaps as much as a minute or two. Much more rarely I have heard a bruit develop when the patient rises, though there has been none when the body was recumbent. Foxwell speaks of this murmur as "the pulmonary murmur" and considers its position to be over the second and third left intercostal spaces. He alludes fully to this characteristic feature of production in the recumbent posture and explains it by stretching of the pulmonary artery under conditions of debility, and he has even known it to develop after the occurrence of heart strain.

If you make a practice of examining the heart of everyone that you see for the first time—no matter what the complaint—both standing up and lying down, I am quite sure that the frequency with which you will find this systolic or these systolic murmurs will surprise you; they are as common as moveable kidneys. These are the chief varieties of what are called "functional" murmurs. I would not say that they are all that occur. They are well known to anyone who has any sufficient opportunities for observation. What, however, is I think not even yet so well known as it ought to be, or allowed for in daily practice, is the *frequency* with which they occur even in healthy subjects, unless mere temporary nervous excitement be judged to be ill-health, and this *variability* in *form* both between one case and another and in the one case also between one moment and another. Their genesis has been discussed repeatedly and still forms a tempting bait in this respect.

Functional murmurs have ever been supposed to convey the indication that at any rate there is something wrong and mostly a blood change to be removed by the administration of iron. At one time or another the site of production has been supposed to be now the aorta; now the pulmonary artery; now the mitral or tricuspid valve; now outside the heart altogether. And he would be a bold man and a very beater of the air who would waste your time by attempting to combat any one of these assertions. At any rate I feel sure that each is true for appropriate cases, but I am concerned to insist that a proportion of them are produced at the mitral orifice; that any one of them may occur in man, woman, boy, or girl, examined, it may be, casually and in whom there need be no sign of any disease or even of disturbance of the action of the heart. I would add as not unimportant to my position that no one of them disappears in any permanent fashion by any means so readily as is perhaps tacitly implied rather than positively asserted.

Now it seems fair to argue that, being so often discovered haphazard, and associated, as they often are, with no symptoms, and being often called into being by a simple change of position of the body, they cannot be, at any rate in many cases, of first-rate importance, and I would venture to change the name of many of them from the old one of "functional" to that of "postural" murmurs. Yet such cases are often rejected at life offices; they are refused for the public services; they come from all quarters committed to the existence of organic heart disease. So common, indeed, are such cases that it is impossible to give even a summary of them, but I will single out a few that have specially interested me or have come across my path while I have been preparing this lecture. A common case is such as this. A tall overgrown nervous youth with a pulse of 104 is under examination. The dulness is decidedly ample over the left side of the chest inside the nipple and there is a diffused forcible impulse spread all over the second, third, fourth, and fifth spaces between the sternum and the left nipple. On auscultation there are a loud systolic murmur over the pulmonary valves, a thick second sound, and at the apex a loud systolic murmur that comes in whiffs as the inspiration rises and disappears absolutely as it wanes. What could sound worse than this description and the case can easily look grave to the examiner, but the signs need all to be seen with the individual as a background and then they are clearly of much less importance. Deduct the nervous excitement and the long narrow chest that cramps the lung and brings the boy's heart unusually to the fore, and then the character of the murmur points to the reasonable probability that the heart is a sound one.

Another case that interested me much at the time was that of a young man, aged 22 years, who, having passed into the Woods and Forests department three years before, was rejected at a final medical examination because he had disease of his heart. He was sent to me by

Mr. H. E. Giffard of Egham, because he could not find anything wrong. I examined his heart in all positions and am sure it was absolutely healthy. I was so convinced that the man must have been nervous under examination and that a mistake had been made that I wrote to the Under Secretary of State and he very kindly acceded at once to my request for a re-examination, but the board adhered to its original opinion and the candidate was again rejected on the ground that he had a valvular murmur that rendered him unfit for service in India. He had never had any trouble with his heart before nor has he had any since, for I heard of him not long ago and I am quite sure there was never anything more than the temporary murmur due to neuro-muscular excitement and I hold that a young man's prospects were unnecessarily placed in jeopardy by reason of ignorance of the character of this murmur.

Another case, a boy, aged nine years, whose father I had seen some years ago as he was dying from cerebral embolism after infective endocarditis, had pneumonia in March, 1904. It was slight and it quite cleared up but his medical attendant at school writes to the medical man at home: "There remains a rather interesting condition of heart or, what I think is quite possible, and more probable, a heart condition that was there before the pneumonia. I find that when lying down the apex beat is outside the nipple line, a distinct murmur can be heard, and the pulse is 80 and irregular. When standing up the apex beat is just inside the nipple line. I cannot hear a murmur and the pulse is 108 and regular. I found that these conditions altered directly he altered his position and however many times one tested." The writer attributes the whole condition to latent rheumatism as the boy had often had pains in his legs and arms and he adds that he had seen similar cases before. Very sagaciously, however, he did not commit himself in any way to the mother of the boy but passed on his impressions to the home medical man for further observation, whose subsequent remarks are equally pertinent. He notes that "when lying down the irregularity of action, as well as the loudness of the murmur, altered when the boy held his breath for a few seconds, the action being much steadier and the murmur less marked. There is nothing abnormal discoverable when he is standing up, even after exertion, such as running round the room twice. The beat is in the normal position and the action quite steady." "The interesting question is," says the medical man, "as to this being a temporary condition which the boy will grow out of; he has grown very rapidly of late. I have advised the mother not to allow the boy to bicycle or undergo any severe exertion for as long as there is a doubt if the condition be permanent or temporary, it being as well to be on the safe side." Advice, I may add, lest it should seem to any to be in excess of the demand, that I thoroughly endorse.[1]

Here is another case that is more doubtful and I give it especially because it is so, for I by no means wish to convey that all of them are free from difficulty. Many want watching and hasty opinions are always bad practice. The patient was a youth, aged 16 years, in whom a murmur had been noticed at the apex two years before I saw him, with some displacement of the impulse beyond the nipple line. It was first noticed after a five mile run. He had been carefully looked after and allowed to bicycle and to cricket a little, and he was much better than he had been; indeed, I think his parents thought too much was being made of his ailment, as they could not see that the boy was in any way incapacitated. But he wanted to go into the army and what were his chances of passing the medical examination became an important question. When lying down there was a systolic murmur, audible from the third rib to the left of the sternum, downwards by the side of that bone, curving round in the fifth space, and below the nipple up into the axilla, where it became much softer. When standing it became both variable in position and intensity. The impulse was forcible and diffused. I do not think this boy will pass into the army and I certainly should not quarrel with anyone for refusing him, or even if anyone were to say the heart were dilated, though I do not think it is; on the contrary, I believe the heart will prove a serviceable and a sound one as the framework of the boy's chest develops.

Once more, I saw last June a man in the army, aged 21 years. He had been sent home from India with this history. He was about to be placed under an anæsthetic for abscess in his foot and an examination of the heart showed the impulse in the normal position, but also in the epigastrium and over the right ventricle. The first sound was accentuated and was accompanied by a blowing systolic murmur over the tricuspid area. The remark appended is that the local signs are in favour of an organic lesion, but the improvement of the man's general health pointed to a functional murmur. I saw him with his then medical man a month or so after he arrived home and his symptoms were chiefly a rapid nervous action. I cannot now say if there was any murmur, but I considered it essentially a nervous heart, and that there was no occasion to be anxious about his future. We lost sight of him and he eventually went out to India again after six months' leave, and as soon as he started work and long and heavy marches he broke down again from, as he told me when I pressed him for definite symptoms, sheer exhaustion. And he was sent home "suffering from *valvular disease*, the effect of climate and duty," the *physical signs*, as recorded on his health sheet, being taken to indicate "organic mitral regurgitation with tricuspid insufficiency." But what do I find? When standing there is absolutely no abnormality of any kind. When recumbent the heart's action becomes cantering and there is an impurity of sounds both at the apex and the base. The real explanation of the case is that he has never as yet had the stamina required for the army, and under the stress of climate and duty he becomes played out not in the heart more than any other muscle, and as soon as he is off duty he recovers himself as he did on the former occasion.

Many a difficulty is there with these cases, and I cannot too strongly urge the necessity of taking a more liberal view of the power of disappearance of even well marked cardiac murmurs. There is no need to neglect them or even to make unduly light of them. We do not know and must wait and see. Such cases need watching and examining from time to time. It is easy to do this without committing one's self to any irrevocable diagnosis or prognosis until time has shown the way. And perhaps this applies with more especial force to childhood than to adult life. Pyrexial disturbances of all sorts are of the commonest of maladies up to ten or 12 years, and there is nothing more common during these attacks than for the first sound of the heart to develop a systolic murmur, in association with the excitement of the muscular action that is one of the common phenomena of fever. Clearly the heart in such cases requires to be kept under careful observation, lest anything escape us of permanent import to the integrity of the organ, but there is no need to excite the apprehensions of the parents. It is a feature of the febrile reaction of childhood and for the most part these bruits quite disappear as the fever subsides and the child recovers tone. In so important a matter as the question of the existence of endocarditis or valvular disease no one should precipitately commit himself to an opinion from which it will be difficult to extricate either himself or his patient. Let me illustrate this by a case. A child has had an attack of fever. A systolic murmur has developed and the heart is said to be affected, and the future sketched out in somewhat sombre light. The fat is all in the fire from the mention of heart disease and the necessity for prolonged rest. But the child was not ill, the temperature was not yet stable, and although admittedly there was a systolic murmur audible from time to time, and I think some little displacement of the impulse, I took a much more sanguine view, based upon the grounds I have already given, that the murmur was a variable one, being frequently entirely absent, and that it was also distinctly a postural one. But it was obvious that my opinion was neither expected nor acquiesced in and I should not be surprised if that child were still undergoing the harmful process of being shielded from his environment in every possible way because he labours under the suspicion of having disease of the heart.

From the question of murmurs I pass to the impulse of the heart or the position of the apex beat as it is more generally called and its meanings or indications. Upon this also far too much stress is laid as an indication of disease. The impulse has been described as having certain relations to the nipple and the fifth space, and I am far from attempting or wishing to question such a rudimentary fact, but it does not follow that if there be a departure from the normal in this respect it is so much the worse for the subject of the deviation. It is possible to live a healthy life with the apex beat outside the nipple and much more often so than

[1] I am indebted to Dr. J. G. McLannahan of Stonehouse, under whom this boy came at a subsequent period, for permission to make use of these notes.

some would seem to suppose. Why not? The heart is free to move within a considerable radius upon its suspensory ligaments at its base and we are dealing with the living nervous heart, with the heart in action, and there is much need for caution in forming conclusions with respect to an organ of this sort. The position of the heart's impulse depends in truth a good deal in the individual upon the shape of the chest, upon the condition of the lung, upon the rate of action of the heart, whether hurried or not, and it depends upon the true concurrence of the systole of the many individual muscle bundles that the heart contains. Thus, in small and long-chested people the heart is *likely* to be outside its normal limit and yet have no ill-meaning such as we are discussing. So, also, in those who expand their lungs badly, or who are nervous under examination, the impulse may be considerably outside the nipple line. I saw a child not so long ago in whom, although the heart was beating an inch beyond this limit, I could not find the slightest evidence of any disease. The child had been said to have heart disease but surely in the absence of all other evidence it was better to let the child live a healthy life and watch than to condemn it for one sign such as this. I think it is of some importance to insist that this concurrence of the muscle bundles in their systolic contraction is by no means habitually so perfect as we are in the habit of assuming. I cannot help thinking that temporary reflux at the mitral orifice is not uncommon from some such cause and that we are too much inclined to ascribe it to disease. We think of the systole as a sudden solid contraction of all the muscle of the ventricular wall, but observation and experience alike show that the departures from this precise action are by no means few and far between. Take the passing irregularities that come to so many after a meal, after drinking tea, after smoking, excitement, or fatigue. They are, of course, exceedingly common and when we watch the impulse in such we certainly find it now here, now there. It is clearly due to some want of synchronism in the individual fasciculi and it is not necessarily a matter of vital importance, although it is certainly one of physiological interest.

Nor must I omit to say a word upon the value of dulness. Within limits rather jealously watched I should regard it as a safer sign of disease than the position of the impulse. But these limits must not be unduly stretched at the bidding of bias. Everyone knows that great increase of the size of the heart may be present without any increase of the dulness and, on the other hand, and it is with this that I am more concerned, there may be apparent increase of dulness without any increase of the size of the heart or of its cavities. Increase of the natural precordial dulness often means no more than an altered relation of the heart to the chest wall or surface; a change in the pulmonary circulation or inflation and not in the heart itself. For example, in narrow-chested people of all ages and either sex, although women and children are its best illustrants, the dulness is often large from the simple fact that the lungs are small and not fully inflated and therefore the heart is much more extensively in contact with the chest wall in front; and under this condition in a nervous subject, to hark back to the former section, it is wonderful how masterful the beat seems to be, and there is indeed excuse for thinking the organ diseased, although it is in truth quite healthy. But then as regards dulness, I would have these remarks apply chiefly to dulness at the base and over the right side and very cautiously indeed, if at all, to the region of the apex. And obviously because the apex of the heart is covered in more or less by lung; lung and stomach tend to tilt it round and away at this part, as it lies trending from the surface. So that, as I have said, there may be a very large heart that is undiscoverable by percussion and a natural heart that may yet appear large. Even the spleen and the left lobe of the liver will get in the way of the determination of the position of the heart towards the apex; and as a result of long-continued observation I must say that I regard percussion in this region as of but little use and liable, if we depend upon it much, to lead to serious errors. I therefore find it impossible to agree with the conclusions of those who when they detect small differences in this area after baths and other forms of treatment ascribe it to a reduction in the size of the heart. It seems to me that the Nauheim treatment in appropriate cases—not all and sundry—has indeed the warranty of *results* but not that of any convincing topographical argument such as its advocates claim for it.

I come next to a number of cardiac disturbances which group themselves together under irregularities of action, and as an introduction to the subject I can hardly do better than recall to your minds all the vagaries of the action of the muscular fibre of the heart that you may hear in any one afternoon in the out-patient room under the excitement of examination. The noises, the plunges, the thuds, the sudden momentary stops that come; and have you not often wished, as I have done, when, as sometimes happens, the case staggers experience, and when, as I maintain, it is a more vital matter to be able to say positively that there is *no* disease than to say there *is*, for the happiness of a life is far more linked to the verdict, "You are *healthy*," than to that other, "You are not quite sound, and you must take care of yourself," for the one means a full life and the other a maimed one; have you never wished, I say, that some mechanical genius would invent such a cardiaphone as would enable one to examine that heart as its subject slept, untrammelled by his nerves? Any of these conditions may be evidence of serious organic disease and a breakdown in the near future, but in themselves they may be simple functional disturbances and of no great moment. Taken as they come I think it is not untrue to say that they may be regarded as trivial, or at any rate hopefully, until you have proved them to be otherwise. This applies to some more than to others. Bradycardia and pain are certainly the most ominous but either may be temporary only. Tachycardia in like manner is often a mere nerve excitement and of no importance, though in certain circumstances it is a most dangerous disease.

Let me say a few words about each of these separately, and perhaps as most common comes first an irregular or intermitting heart. I know not which is the more common or the less important. A heart that beats irregularly in time is very common as a transient thing. Again I may advert to the power of the mere change of position of the body to effect this. Put a man on his back, from the erect position, and it will happen very often that the heart changes at once from a steady beat to a cantering or galloping action, or some new rhythm may develop, such as two beats distinct, followed by two feebler beats, or a more generally patternless irregularity may ensue. Those past middle age furnish the best examples at once of cardiac irregularity and of the difficulty there is in judging of its value as a symptom. There is, of course, an irregularity that is associated with definite signs of defect, either muscular or valvular, and symptoms of failure in the circulation. I do not allude to that. The picture that comes before me is that of the man or woman of, say, from 45 to 60 years or more, who suddenly, perhaps, becomes conscious of a frequent full or choking sensation at the top of the sternum, or of indigestion. You examine and find the heart pirouetting behind the chest wall like a ballet dancer or a performance on the bagpipes to the tune of a Highland reel, if you could convert the idea of sound into that of motion. Such a condition as this has a special proneness to come on after food when the stomach is distended, or later when there is a tendency for the irregularity or intermission to be attended by the eructation of gas. It is clear that these conditions are often enough no matter of disease, for the attacks come on from time to time; they come and go quite suddenly; are absent often for weeks or months; between times there is no shortness of breath or other evidence of heart disturbance; and they are likely to be associated with the presence of uric acid in the urine. There is plenty of evidence, therefore, that some fault of metabolism exists and therefore some temporary changes in the nutritive fluids. One may well doubt if several causes, each in its own degree, may not conduce to this overcharging of the furnaces, but so marked is the association with one or other stage of digestion that I cannot but think that many own immediately an abdominal origin; that they are caused through some waning influence on the part of the great ganglia of the abdominal nervous system. And perhaps this may throw some small ray of light upon one or two other maladies which, although we must call them disease, it is questionable whether *qua* heart they are really so. Two are common; two are of pathetic interest, so swift, so tragic, is their ending. I will take them in their order—Graves's disease, angina pectoris, some forms of sudden death.

The first named comes properly next, as in effect it is a similar malady to that just described. It differs in

no other way than that it is much more likely to be intractable and even permanent in some. No better illustration of the need for keeping separate disease and unnatural function could be given, for it will exist for years without producing evidence of disease and it therefore affords the best possible example of the never-say-die principle that is inherent in the heart and of the power of that organ to cope, and to cope successfully, with very adverse circumstances. Angina pectoris is not as happy in this respect, but it also has in some respects a similar history. It is well known that when anyone dies from this malady the coronary arteries are almost invariably found diseased, and although it has been a much vexed question the changes found have come to be considered as its cause. And I think Osler at any rate has stated that in *most* cases carefully examined during life some evidence of disease about the aorta will be found to exist. I demur to both opinions. Angina pectoris is common amongst us, if we are on the look out for the milder forms of it, but then it is not for me a sudden dreadful chest pang that comes and kills within, perhaps, a few hours. That is a rare variety. It is much more a paroxysmal twinge in the epigastrium or chest that almost invariably takes a man in walking, and apparently because he walks and because he walks up-hill, and moreover it is quite astonishing at how small an incline the anginal patient will shy. He stops and looks into a shop and within a few seconds the pain will have vanished and its departure is nearly always associated with the eructation of wind. So much is this the case that it is often mistaken for a simple indigestion, which is all the more plausible in that it is a common visitant when the walk is taken soon after a meal. It is constantly finding out the City man after his breakfast. It is also a malady that comes and goes, sometimes goes altogether, but is also more usually one of the most intractable of the neuralgiæ with which we are called upon to deal, and too often it has come to stay with intermissions. And here is the point: I have known it to last in two cases 20 years, and several times some, if not many, years, so long indeed that it seems impossible, at least unlikely, that the disease which was found at the last was indeed present at first. I have certainly examined these mild cases by the score without finding any trace of disease of the heart and all my later experience confirms me in saying what I said years ago in this respect, that the pain is best explained by regarding it as a neuralgia, or storm, that emanates from the great abdominal brain, although I was inclined at one time to regard it as a cramp of the heart.

It might perhaps be thought that the very generally accepted association of vascular tension with angina is adverse to this opinion and so I think it might be. But I have never yet accepted this view of angina pectoris for more than a small proportion of cases. I say—assured in my own mind that I am right, although it is contrary to the opinion of the most experienced men—that, as a rule, there is no increase of tension; I have had my finger on the pulse all through a spasm of angina many a time. Angina is if anything a disease of low tension, as is to be expected of a crushing pain that emanates from the pit of the stomach. A man is seized in the graver cases with a pain so bad that it kills him. He knows that he is dying and he dies—a quite uncommon fact in human experience—and we call it heart disease. Why? for my very life I cannot imagine. These are not the symptoms of heart disease. The symptoms of heart disease are mechanical, plus distress, not *agony*. And, moreover, the most extreme arterial tension may be quite free from pain. Or in the commoner cases perhaps the man goes to bed, wakes up with a pain—how bad can be never told—and he dies quite quietly. A sudden death from heart disease again we call it; but the untutored juryman in such a case comes nearer the mark, I fancy, when he returns his verdict as the "visitation of God," for is not the catastrophe much more like a lightning stroke that has rent the organism, stopped the machinery, and left no trace of the real cause behind it?

Of the usual explanation of sudden death when no obvious cause exists I have much the same to say. Such cases are not common, but they occur, and heart failure is now the prevailing diagnosis, I think; it occurs so often in the first columns of the *Times*. But I refuse to accept such a verdict when, as is surely no uncommon occurrence, the accused organ has been examined within quite recent times and to all outward seeming has been passed as healthy. Moreover, the heart has far too much grit in it to tumble down dead except under well-known and definite conditions.

Not much time remains to me to discuss the other two muscular derangements which I have included in my list—viz., tachycardia and bradycardia, or the runaway heart and the slow heart. The runaway heart we are in the habit of considering as a *nerve* effect—that is, as some disturbance of the regulating ganglion of the heart; but I doubt if this be so for the slow heart, in which there is at any rate a common tendency to assume degenerative changes in the muscular wall with all the necessary consequences. Yet the evidence is not wanting in many of these cases as the fault runs on that points the other way. One can readily understand that if the nervous energy of the heart should fail the muscle would probably lose its tone and dilatation of the wall would be very likely to follow. But that there is any appreciable change either in nerve or muscle in the first instance is surely disproved by its suddenness of onset, and sometimes (probably generally in the case of tachycardia) of its departure, good health remaining between whiles. I should not say that a preternaturally slow pulse was often sudden in its subsidence, although I have known it so, and perhaps especially in cases that have raised suspicions of gout. As a rule it occurs in people past 50 years of age, and when it comes it comes to stay. But there need be no symptoms of heart failure; it would seem more as if the generator were working badly, and by-and-by a switch fails, the circuit breaks, and dissolution comes. I incline towards some of such cases at any rate being bulbar in their origin. And as bearing on this point think of the heart, the pulse, of Addison's disease; the heart, the pulse, of severe abdominal injuries, and of other maladies I cannot now mention. The heart you can hardly hear, the pulse you can hardly feel, and yet withal a something about them quite different from the "weak" heart, the "weak" pulse of common parlance, which mean nothing at all. There can be no question of disease of the heart in these; they are suffering from a profound interference with the great nervous centres of animal life; the pitcher is broken at the fountain, and you know it, but yet it is past finding out. All these muscular anomalies, too often ascribed to fatty and other degenerative changes in the wall of the heart itself, link up together in one great group, whether they be slow hearts or quick hearts, or irregular hearts, or what not. They are all more or less an expression of, if you like, morbid, nervous agency, of which some perhaps are toxic and temporary, some neuritic and likely to be permanent.

Now I wonder whether you have followed my drift, for I must confess as I retrace my own thought that innocence and guilt seem to have been somewhat incongruously mixed; I must often have seemed to have been straining at a gnat and swallowing a camel. Nevertheless, this endeavour to bring within proper limits, and only this, the significance of some of the common forms of departure from the normal function of the heart is directed to the diagnosis, treatment, and prevention of real disease. Discussing a questionable case of heart disease the other day it was said to me: "There is no *disease;* the heart is only a little dilated and fatty." But what more disease can you ask? It points well my moral, which is this: that all these ailments which I have mentioned, ofttimes trivial, ofttimes transient, are too often but pegs upon which to hang a diagnosis of dilatation of the heart, and in the present day we make much too free use of this diagnosis. I regard dilatation as one of the worst of all the heart's diseases and to play with such a term is to play with a torpedo. Surely dilatation, save in exceptional circumstances, should be reserved for a disease that is associated with some series of definite symptoms, not made dependent, as over and over again it has been, upon the mere fact that the impulse can be felt to beat in the nipple line or even, perhaps a little beyond it, or some transient murmur has made its appearance. I must not go so far as to say that dilatation cannot exist without symptoms, for in the obscurity that surrounds sudden death it may be that it can; still it must surely be an exceptional occurrence and I think one ought to expect that even in slight degrees some of the signs of a failing circulation should exist and amongst these I emphatically do *not* include either giddiness or fainting. Disease of the heart seldom, if ever, causes either. I have often said this before but it is a point that still needs rubbing in.

If ever the history of medicine for this last decade or two should come to receive any exhaustive description I fancy that upon the Nauheim treatment for dilatation of the heart will rest a large share of responsibility in this matter for dwelling with such insistence upon the existence of dilatation when signs and symptoms other than dulness

on percussion are completely, or almost so, in abeyance. The weaklings and sensitive about their health, always anxious about "the weak heart," have caught on, so to speak, and numbers have flocked to this place and to that for baths and exercises for the minor ailments which I have indicated who have been quite free from anything like dilatation and from any real disease. And the general trend on the part of the delicate has, I think, reacted upon us, and in our dread lest we make a mistake we have too often outrun all sobriety of judgment. And why do I make such a point of this? Because as I think it is a harmful thing for anyone to coddle his heart when there is no disease, and I think we are far too instrumental in aiding and abetting this. As regards dilatation I rather hope I see signs of a turn in the tide, for on two occasions of late patients have said to me spontaneously that they have got a distended, not a dilated, heart, and perhaps that was so. But there are other terms in general use that I like little better than this one of dilatation because they have come to mean too much. One of them is heart strain. Take the last case of this kind that has come before me. A young man, aged 25 years, has strained his heart, so he says, rowing three years ago, and has never been well since, his heart still running away if he does anything violent. But what is the truth about him? He is a six feet four inches specimen of the most weedy nervous humanity one could ask to see, with a spine like a corkscrew and lungs of course to match. His weight is only 10 stones 12 pounds. His heart is sound enough. It is no fair description to call this heart strain; lung strain would be more to the point if one needed to single out an organ; but a neglected sapling would better describe him. He is chained to a desk from ten to four, has three weeks' holiday once a year, and at night is a tag of the fringe of a great city. What is there of fitness in calling this disease of the heart? or heart strain? At any rate, if it be, the treatment for it, if it could be adopted, would be to send him rough-riding over a cattle ranch for a year or two to develop his muscular and bony frame—that is, more work for his heart and not less.

We must all have come across many similar cases, some even may be who have been condemned to long periods of inactivity because of one or other of these several conditions I have mentioned. But I doubt if rest is the proper treatment for such cases or if the heart should in any case be the subject of blame. My conviction is that if nothing were said about the heart, the patient calmed, kept quiet for a day or two, and then allowed gradually to resume his natural pursuits we should have far less of the months of cardiac trouble that are now, as I think, by no means uncommon.

A weak heart has served me as a text before now but it still flourishes as strong as, if not stronger than, ever. I should have no objection to the term if it were one devoted exclusively to letting down easily the man with real disease and of keeping life and hope within him. Such a use would, to my mind, be nothing but good and proper, but it is a very different matter when its chief purpose is to clothe a sound heart in the garb of a diseased one. A man with aortic regurgitation the other day wanted me to call his heart a weak one, and as I had already told him that he had a definite valvular defect I was willing to fall in with his humour, and to agree with him that his heart *was* decidedly "*weak!*" No harm was done there, but I by no means feel so accommodating when I am asked to call a heart weak when after careful examination I have found it healthy. I only know of two kinds of heart, the healthy and the diseased ones, and these weak hearts, like the dilated ones that I come across, are nearly always structurally sound. What are the symptoms of a weak heart? I know of none. And yet the use of the term leads either to a state of nervous dread, from which recovery is most difficult, or else to a life of luxurious idleness, which, by the enervation it causes, is likely sooner or later to be precedent to the end it would seek to avoid.

I cannot help thinking that in this day of what we must do and what we may not do, this abundant care for the well-being of the individual in all directions, we are getting somewhat sickly in our views of health, and we are in danger of assuming the existence of a tripe-like heart, and overlooking the energetic attributes of living muscle? The heart does not become dilated readily. On the contrary, it is equal, and more than equal, to all the ordinary, and many of the extraordinary, emergencies of life. Ay, and I am glad to insist upon much more than that, for, as you all well know, even under the stress of serious incurable disease its energy will keep its failing powers going for much longer than our poor forecast gives it credit and that sometimes it is all the better for being so called upon. I cannot give a better illustration of this than the case of mitral stenosis.

When we consider that nearly always the contraction of the valve must take years to mature and even when it is apparently fully come it may last, as I can say, for 20 years, the subject even living a fairly active and useful life, one may well carry the lesson to other forms of heart disease and deal a little less extravagantly with the principle of rest. I often see, as I think, this treatment pushed too far, or perhaps I ought rather to say that judging no man I often ask myself, Is this good or bad treatment? I see people absolutely forbidden to walk up hill or exercised—no, aired only—in a bath chair, or carried up and down stairs, or pinned to bed, and I feel inclined, with the world, the flesh, and the Devil of my earlier years, to renounce them all. I daresay I am wrong, but it is seldom indeed that I order anyone to be carried upstairs. It should be reserved for well considered emergencies that seldom come, and Oertel's suggestion of graduated exercise up hill I believe to be a most valuable one, provided that it is taken very slowly and with the mouth open. In this frame of mind one will make mistakes. I sadly and sorrowfully admit it. Indeed, in the mood of the great Napoleon, I must say I have been mistaken so often I no longer blush for it and, no doubt, after having given a positive opinion in favour of a sound heart a sudden death will now and again come to torture you and as it were to make you hesitate in the course marked out. Such things may well quicken our perception and go to render our judgment more keen. But none the less I am sure of this, that we do far more good in our day by pronouncing people sound, if out of health, and by sending them forth with strengthened hope, than by keeping them in the chains of uncertainty and nervous dread, than which nothing can be more crushing to the utility of a life or more harmful to the chance of regaining health.

Years ago there was a discussion at one of the societies upon aneurysm of the aortic arch, and I, having made the remark that it was practically an incurable disease, as judged from the evidence of the post-mortem room and the museums, and so it is, Sir William Broadbent promptly and felicitously retorted that the post-mortem room was not the place to look for cures! I was quick to see then that what seemed an obvious truism did but dissemble the truth, but to-day and here I am older, and I now see that other face with fuller meaning, which then perhaps I slighted. And so I have availed myself of the honour you have done me to discourse to-night in other terms upon the buoyancy of life and to preach that it is not well to seek too much for the dead amongst the living. To ask you to accept my opinions would be the last thing that I would do but I may ask you to think them over and weld anything that may be agreeable thereto with your own experience.

THE REACTION OF PHENYLHYDRAZIN WITH OTHER SUBSTANCES THAN DEXTROSE OCCURRING IN THE URINE.[1]

BY P. J. CAMMIDGE, M.B. LOND., D.P.H. CANTAB., &c.

THE application of phenylhydrazin as a reagent for the detection of sugar in the urine marked an epoch in the investigation of glycosuria and allied conditions; for not only is it much more delicate than any test previously employed, but it is unaffected by other substances such as creatin, creatinin, hippuric acid, homogentisic acid, and excess of uric acid or urates, as met with in human urine, that are liable to give rise to difficulties when most other methods of detecting sugar are relied upon. This reagent has also the advantage of allowing the various forms of carbohydrate to be distinguished. This is a matter of some importance, for although dextrose is undoubtedly the commonest sugar met with in the urine, there is considerable evidence to show that other forms of carbohydrate and

[1] A paper read before the Royal Medical and Chirurgical Society on June 6th, 1905.

allied substances occur more frequently than has been supposed and that their presence is associated with various abnormalities of metabolism. As more detailed attention is paid to the investigation of the urine in cases of supposed diabetes and some diseases in which glycosuria is likely to occur, our knowledge of the true significance of these rarer forms will be increased and possibly at the same time our information as to the mechanism of normal carbohydrate metabolism may also be added to. A brief survey of the more important characters of the phenylhydrazin compounds which may be derived from the urine may be of some service. The test is now frequently employed clinically, but it is not often that the investigation is carried further than the preparation of the osazone crystals and it is probable that much valuable information is missed in consequence.

The method of performing the phenylhydrazin test described by von Jaksch has been much modified by subsequent writers and, since the physical conditions under which it is carried out materially affect the result, it will be necessary to refer to the chief variations proposed. Von Jaksch originally recommended[2] that 50 cubic centimetres of the urine to be tested should be mixed with two grammes of sodium acetate and from one to two grammes of phenylhydrazin hydrochloride, and that the mixture be heated in a water bath for from 20 minutes to half an hour. If glucose is present the osazone then separates out on cooling as an amorphous or crystalline deposit of a yellow or reddish colour. If amorphous, the precipitate can be recovered in a crystalline form by dissolving it in hot alcohol, diluting the solution with water, boiling to expel the alcohol and then cooling. This method of performing the test takes time and requires the use of special apparatus which is not always available. To obviate these difficulties and render the reaction convenient for clinical use it has been suggested[3] that 0·5 gramme of phenylhydrazin hydrochloride and 1·5 grammes of sodium acetate should be dissolved by gentle heat in a few cubic centimetres of water in a test-tube and then 5 to 10 cubic centimetres of the urine added. The mixture is brought to the boiling point and maintained there for three minutes with strong and five minutes with weak solutions of sugar. The test-tube is then set aside to cool and the deposit examined for osazone crystals in five or ten minutes. Some authorities, following E. Fischer,[4] have preferred to use phenylhydrazin and not the hydrochloride but it has the disadvantage of not keeping well. A knife-point of sodium acetate is added to 10 cubic centimetres of the urine, then from one to two cubic centimetres of 10 per cent. acetic acid, and five drops of pure phenylhydrazin introduced. The mixture is heated in the water bath or over the free flame in the same way as when the hydrochloride is employed. A recent modification of this method suggested by Kowarski,[5] which gives very satisfactory results and is more delicate, consists in mixing five drops of pure phenylhydrazin in a test-tube with ten drops of acetic acid, gently shaking and then adding about one cubic centimetre of a saturated solution of sodium chloride. To the solid mass that forms are added from three to five cubic centimetres of the urine and the test-tube is heated in the free flame for two minutes after its contents begin to boil. On cooling the osazone crystals separate from urines containing over 0·2 per cent. of sugar in one minute and from weaker solutions in about five minutes.

In whichever way the test is carried out a difficulty occasionally arises from the formation of a crystalline phenylhydrazin compound of glycuronic acid which is liable to be mistaken for the osazone of a sugar. It has been stated[6] that prolonged heating tends to obviate this source of error, the glycuronic acid compound being precipitated on cooling as a brown amorphous mass and not in the crystalline form. In the examination of 100 normal urines I sought to test the truth of this statement and found that when heated in the water bath for an hour four of them showed a crystalline deposit, while by boiling in the free flame for five minutes six specimens gave a positive result. Using the same methods but shortening the period of heating to 20 minutes and two minutes respectively exactly the same results were obtained, so that the mere time or method of applying the heat cannot be relied upon to differentiate glycuronic acid from the sugars. In addition to dextrose, the sugars lævulose, lactose, maltose, isomaltose, and the pentoses, arabinose and xylose, have been described as occurring in the urine and forming compounds with phenylhydrazin. Glycuronic acid, as I have already mentioned, also forms a compound with this substance and exceptionally combinations with acetone, aceto-acetic acid, oxalic acid, and in very concentrated urines with uric acid may also be encountered. As human urine is relatively poor in uric acid, the last named does not call for further remark. The acetone compound occurs as needles which melt to oily globules at 16° C., while the oxalic acid salt separates as insoluble, glancing, colourless plates which melt at from 172 to 173° C. The phenylhydrazin compounds of the remaining substances possess certain physical and chemical characters by which they can be more or less readily differentiated. The chief of these are: (1) the rate of osazone formation; (2) the microscopical characters of the crystals; (3) the solubilities of the osazones in various reagents; (4) the melting points of the purified products; and (5) the percentage content of nitrogen.

1. The rate of osazone formation is a point of considerable importance in determining the variety of sugar present in a particular solution, for, as Marquenne has shown,[7] this is a property which has very characteristic variations for the different carbohydrates. Under experimental conditions, with solutions of definite strength, exact time-limits for the appearance of the osazone can be laid down. Although this is not feasible with such a liquid as urine, where the proportion of sugar present is unknown, valuable information can be obtained by observing the conditions and rate of osazone formation. The compound formed by dextrose and lævulose separates from the hot solution after a comparatively brief interval, the former in most cases with characteristic suddenness. The osazones of maltose, lactose, and the pentoses only form after much more prolonged heating and although crystals of pentosazone may eventually separate from the hot solution, maltosazone and lactosazone never appear until the fluid cools, no matter how long it may be boiled. In my experience the rapid method of performing the phenylhydrazin test gives a reaction with all sugar when ten cubic centimetres of the urine are used and the heating is continued for at least five minutes. In the water bath, however, even an hour is not sufficient to obtain a satisfactory yield with maltose, lactose, and pentose, an hour and a half or even two hours being required to demonstrate their presence satisfactorily, especially when the solution is weak. Those who prefer to use the water-bath method, therefore, and limit its time of application to 15 or 30 minutes can only expect to demonstrate dextrose or the more readily precipitated sugars and possibly also any glycuronic acid compounds that may be present in the urine.

2. Microscopical examination of the crystalline deposit obtained after treatment with phenylhydrazin shows certain differences in the characters, size, and arrangement of the crystals which are suggestive. The large yellow needles arranged in sheaves and rosettes yielded by dextrose are well known. Lævulosazone resembles glucosazone, but there is less tendency to rosette formation and the crystals are usually somewhat longer and more slender. Lactosazone occurs as spherical masses of crystals resembling a shaggy yellow chrysanthemum. At the periphery the separate crystals can be distinguished and are seen to be slender, flexible, and hair-like, but in the centre they are felted together into a brown semi-opaque mass. In preparations made by the rapid method the individual crystals are usually not as distinct as those formed after prolonged heating in the water-bath, the appearance presented being that of a brown central boss surrounded by a light yellow halo showing "fine" radial striations. The crystals of maltosazone are short, stiff, and sword-like, and are arranged in small rosettes when prepared by the water-bath method. Preparations made by heating in the free flame are less characteristic, consisting of narrow crystals grouped in small bushy sheaves. Isomaltose yields masses of aggregated flexible needles of a golden-yellow colour, mostly arranged in spheres. The pentose crystals are silky, tangled, curved needles, generally arranged in rosettes. The shape, size, and arrangement of the crystals are influenced to a certain extent by the

[2] Zeitschrift für Klinische Medicin, Band xl., p. 20.
[3] Brit. Med. Jour., 1901, vol. i., p. 454.
[4] Berichte der Deutschen Chemischen Gesellschaft, 1884.
[5] Lehrbuch der Klinischen Untersuchmethod (Eulenburg, Koe'e, und Weintrand, Band i., p. 80).
[6] Practical Uranalys's, Purdy, 1894, p. 105.
[7] Comptes Rendus de l'Académie des Sciences, 112, 799.

manner in which the test is carried out and by the rate of cooling, so that not only is some experience of typical preparations required in forming an opinion but the physical condition under which the sample under examination was prepared must also be taken into account. In some cases the crystalline form can only be determined satisfactorily after the specimen has been purified by recrystallisation.

3. The osazones can be differentiated to a certain extent by their solubilities. Thus, pentosazone is readily soluble in water at 60° C., but dextrosazone is almost insoluble. One part of lactosazone dissolves in from 80 to 90 of boiling water, while maltosazone is still more soluble (1 in from 70 to 75). Isomaltose dissolves 1 part in 4 of water at 100° C. I have found that the rate of solution of the osazones in dilute sulphuric acid is of some value in distinguishing the phenylhydrazin compounds of dextrose and lævulose from those of other carbohydrates. On irrigating a preparation of the latter with a 33 per cent. solution of the acid the crystals turn brown and dissolve rapidly, while dextrosazone and lævulosazone only slowly assume a brown colouration and take several minutes before they disappear. All the osazones are soluble in hot 50 per cent. alcohol and advantage is taken of this fact to prepare them in a pure form.

4. The melting point of the crystals obtained from urine by the phenylhydrazin reaction is one of their most useful and characteristic properties. The product employed for the purpose must, however, be pure, or doubtful and misleading results will follow. Thus, the melting point of pure dextrosazone is from 204° to 205° C. but the impure crystals obtained directly from the urine generally melt somewhere between 173° and 194° C. Lævulosazone melts at the same temperature as dextrosazone. The melting point of the phenylhydrazin compound of lactose is about 200° C. and of maltose from 206° to 207° C. Isomaltose begins to form drops at from 140° to 145° C., melts at from 150° to 153° C., and blackens at 200° C. The osazone of the pentoses in a pure form melts at 160° C., but as obtained from the urine the melting point lies between 156° and 158° C. As the osazones undergo decomposition on prolonged heating it is necessary that the temperature should be rapidly raised at first and then gradually increased as the point of fusion is approached, or charring of the specimen may obscure the change of state.

5. The formula of the osazones formed by the monosaccharides dextrose and lævulose is $C_{18}H_{22}N_4O_4$, while that of the disaccharides lactose, maltose, and isomaltose is $C_{24}H_{32}N_4O_9$. Hence the former may be expected to yield 15·64 per cent. and the latter 10·76 per cent. of nitrogen. In practice slightly lower readings are found to be the rule, about 15·58 per cent. being obtained for dextrose and lævulose and 10·67 per cent. or thereabout for the disaccharides. The percentage of nitrogen contained in the pentosazones is 17·07, as the formula is $C_{17}H_{20}N_4O_3$. By determining the percentage of nitrogen in an osazone it is therefore possible to decide to which of these three classes of carbohydrate the sugar belongs. A satisfactory determination is, however, only possible when a sufficient amount of the pure product and the necessary apparatus are available for a combustion experiment, as Kjeldahl's process is useless for the purpose, the separation of the nitrogen not being complete.

Consideration of the properties of the compound that a sugar forms with phenylhydrazin therefore enables one to distinguish between all the recognised varieties occurring in the urine save only dextrose and lævulose. Here reliance must be placed on other tests, such as the polariscope, Seliwanoff's test, and the reaction with methyl-phenylhydrazin. It is evident, however, that unless special care is taken the rarer forms of carbohydrate may readily be overlooked, especially if only small quantities are present, and that in some instances the method usually employed for demonstrating glucose will not suffice to reveal all that a more extensive use of the test would teach. It is consequently not surprising that comparatively little is known as to the occurrence in the urine and real significance of other varieties of sugar than dextrose.

Recent research has shown that lævulose is often present in diabetes along with dextrose, and it has also been described as occurring alone in mental depression, melancholia, and sleeplessness. Lactose is present in the urine of a considerable percentage of women during the puerperal period and is most marked when the breasts are gorged. Sucking infants with gastro-intestinal catarrh are also said to pass lactose in their urine occasionally. Hitherto maltose has only been met with in a few cases of disease of the pancreas and, so far as is known at present, its occurrence is confined to this class of case. Unfortunately, maltosuria is by no means a constant symptom of pancreatic disease, and cannot therefore be relied upon for diagnostic purposes. In an examination of 245 specimens of urine from cases of disease of the pancreas by the phenylhydrazin method I have only met with two in which an osazone having the characters of maltosazone was obtained in sufficient quantity for an accurate investigation and five in which a small deposit of crystals, probably also maltosazone, was given. One of the former was a patient in whom an operation for stone in the common duct with chronic pancreatitis had been performed four years previously. Isomaltose is prepared artificially along with maltose, in the reversion of glucose by the action of malt diastase, pancreatic juice, saliva, or blood serum on starch. It has been found in small quantities in apparently normal urine and up to the present it has not been determined whether its presence is associated with any particular metabolic disturbance or if an excess occurs under pathological conditions. Two varieties of pentose are encountered in the urine, a dextro-rotary and an optically inactive form. The former is found in alimentary pentosuria following in healthy persons the ingestion of pears, plums, cherries, bilberries, and other food materials containing pentose, while the latter is the form met with in chronic pentosuria and under pathological conditions. Only a few cases of chronic pentosuria have been described but more careful routine examination of the urine would probably show that the condition is more commonly mistaken for ordinary diabetes than is generally supposed. In a few cases of pancreatic disease, and frequently along with dextrose in severe diabetes, pentoses have been reported as present in the urine. This is interesting in view of the fact that extirpation of the pancreas in dogs is followed by excretion of a pentose in the urine. In none of the cases of inflammation or malignant disease of the pancreas that I have examined has any evidence of the presence of this substance been found.

Glycuronic acid, the only other important substance forming a compound with phenylhydrazin that is met with in fresh urine, is closely related to the sugars. It represents an early stage in the oxidation of glucose where one atom of oxygen has replaced two hydrogen atoms in the group CH_2—OH. It is not found free in the urine but always in combination with various bases and with fatty and aromatic alcohols, especially the latter. In perfect health the amount excreted is small, but when the conditions are such that there is an excessive formation of phenol, indol, and similar products of putrefaction the excretion is correspondingly increased. It is well known that the increased reducing power of the urine after chloroform anæsthesia and the administration of certain drugs such as camphor, chloral, salicylic acid, turpentine, thymol, &c., is due, not to sugar, but to conjugated glycuronic acid which these substances cause to pass into the urine. In cases of respiratory difficulty and in febrile diseases an increased output of glycuronic acid is said to take place. The urine of diabetics often contains glycuronic acid, and even in severe cases the tissues appear to be able to carry the oxidation to this point, for the administration of appropriate drugs will cause a large amount to be passed. Large doses of sugar in the apparently healthy may be reflected in the urine by an increased excretion of glycuronic acid. Alkaline salts of the acid form a compound with phenylhydrazin, which slowly separates on cooling as yellow needles usually of a somewhat darker colour, of smaller size, and more irregular shape than the osazones of the sugars. Some compounds of glycuronic acid undergo the decomposition that must occur before it combines with phenylhydrazin more easily than others, so that the readiness with which the reaction takes place varies. A urine containing a compound such as urocholic acid, which readily splits up, quickly responds to the test but the more resistant phenol and indol compounds require prolonged treatment before they react. When the reaction takes place in a solution containing free acid the phenylhydrazin compound is precipitated in the form of dark-brown granules and does not assume the crystalline form. Prolonged heating is said to bring about a similar result but in practice this cannot be depended on to distinguish the sugars from glycuronic acid. The crystals are readily soluble in hot alcohol but generally separate from this solution after dilution with water and boiling in an amorphous form. In

33 per cent. sulphuric acid they dissolve in about one to two minutes. The melting point of the crystalline variety is 114°–115° C., but the amorphous form requires heating to 150° C. before any change is observed. Since the formula of the phenylhydrazin compound of glycuronic acid is $C_{12}H_{18}N_2O_{10}$, it is calculated to yield 16·4 per cent. of nitrogen on combustion. It is not at all an easy matter, however, to obtain a sufficiently pure specimen from the urine to allow of an accurate determination of either the melting point or the nitrogen content.

The freeing of glycuronic acid from its combinations is most readily effected by heating with dilute acids. Hence some urines that do not react with phenylhydrazin alone may do so after such treatment, and in others the yield may be materially increased. In an investigation with the phenylhydrazin test of a series of 100 urines from apparently healthy people, I found that in addition to the six already mentioned which gave a reaction with phenylhydrazin alone, 13 yielded a positive result due to glycuronic acid after treatment with hydrochloric acid. The series, on being divided into an earlier set of 43, derived from persons living in the country with an abundance of fresh air and exercise, and a later set of 57 obtained from city dwellers who lived under less favourable hygienic conditions, showed that none of the former gave a reaction until the urine had been boiled with acid, and then only three yielded a crystalline deposit, but that six of the latter gave a positive result before treatment and nine after.

Glycuronic acid is not the only substance capable of combining with phenylhydrazin that is set free in the urine by heating with dilute acids. Under certain pathological conditions an appreciable quantity of an osazone with a definite melting point differing from that of glycuronic acid may be obtained. It has been stated that when normal urines are boiled with one-tenth volume of strong hydrochloric acid for five to ten minutes and the excess of acid neutralised very characteristic crystals are "invariably" obtained with phenylhydrazin.* This is not by any means my experience, for in 94 normal urines that gave no reaction with phenylhydrazin I found that 19 gave a slight crystalline deposit and seven a more marked result after boiling with hydrochloric acid. Of these, 12, as I have already stated, were glycuronic acid compounds, so that in 14 out of 94 specimens from apparently healthy people there was a reaction due to some other substance. Only three of these were at all comparable in degree with what is met with pathologically and as all three were derived from persons living a sedentary life and occurred in my later series I think it is not unlikely that the reaction was an expression of a disturbance of function. In disease, especially where there are inflammatory reaction and marked tissue change or an affection of the kidneys, treatment of the urine with an acid previously to the application of the phenylhydrazin test produces a marked and in many instances a most striking effect if the operation is carefully performed. The details of the experiment, however, exert considerable influence on the result, and some experience is required to determine what conditions are best suited to obtain the most characteristic effect with the particular specimen of urine under examination. Insufficient or too prolonged heating after the addition of the acid may prevent the reaction or interfere with it, while unless care is taken in carrying out the neutralisation of the excess of acid the derivatives obtained may be destroyed or their presence obscured. Boiling in the water-bath for from 15 to 30 minutes is in my experience quite insufficient to secure a characteristic reaction with phenylhydrazin when this test is subsequently applied. To avoid the difficulties attending neutralisation with a caustic alkali I have generally employed a neutral salt that formed an insoluble compound with the acid—lead carbonate for hydrochloric acid and barium carbonate for sulphuric acid. Although lead chloride is soluble in hot water it is almost insoluble in cold, especially when there is a little free hydrochloric acid present. It is therefore essential in using this method, if difficulties from lead salts are to be avoided, that the solution should be well cooled before the carbonate is added and it is an advantage if a trace of hydrochloric acid is left unneutralised. Of course, the usual precautions in filtering off the insoluble lead compound are necessary. Sulphuric acid gives comparable results with hydrochloric and the more complete insolubility of barium sulphate is an advantage, but much more care is required to secure constant results. The fact that similar crystals are obtained from the same urine with both acids and with different methods of neutralisation indicates that those produced by the use of hydrochloric acid and lead carbonate are not lead compounds, as does also their not responding to any of the reactions for lead when isolated and purified.

My experience of this reaction has been chiefly gained in connection with work on diseases of the pancreas which I have carried out in conjunction with Mr. Mayo Robson. Up to Dec. 31st, 1904, I had the opportunity of examining 479 specimens of urine from 295 cases, most of the patients being under Mr. Robson's care, and on many of whom he performed an abdominal section.

In 130 cases the urine when treated with hydrochloric acid and neutralised with lead carbonate yielded with phenylhydrazin hydrochloride and sodium acetate a considerable flocculent brown deposit, which under the microscope was found to consist of yellow crystals smaller than glucosazone and generally arranged in rosettes. In some the crystals were slender and somewhat resembled small lactosazone or pentosazone crystals, while in others they were less delicate and approached the glucosazone or even maltosazone type in shape. Their time of solution in 33 per cent. sulphuric acid varied from half to one and a half or two minutes when the mean of several observations was taken. On being filtered off, washed, extracted with boiling 50 per cent. alcohol and re-crystallised they gave a melting point of from 168° to 170° C. (Fig. 1.)

FIG. 1.

Crystals from the urine in a case of pancreatitis, with obstruction of the common bile and pancreatic duct by a gall-stone.

The clinical symptoms in 116 of these cases pointed to disease of the pancreas, and in 79 it was possible to ascertain the condition of the parts at operation. In five the diagnosis was confirmed post mortem, shortly after the last examination of the urine had been made. Three cases in which fine rapidly dissolving crystals were isolated from the urine were found to be suffering from acute pancreatitis with fat necrosis. One succumbed shortly after the operation and was examined after death. In 37 gall-stones were found impacted in the lower part of the common bile duct and the pancreas was stated to be unmistakably enlarged and hardened. In two cases a similar condition of the gland was found, associated in one with obstruction and considerable dilatation of the common bile duct and in the other with a malignant growth of the duodenal papilla which subsequently proved fatal. In two cases pancreatic calculi were found and in two others a cyst of the pancreas was dealt with. The pancreas was recognised as being enlarged and harder than usual in 29 cases, but no obstruction of the ducts could be found at the time of operation. In one case a malignant growth of the stomach was found adherent to, and growing into, the pancreas. In three cases, although there were gall-stones in the gall-bladder or cystic duct, no abnormality of the pancreas to sight or touch could be detected. Three cases in which the urine during life gave a well-marked deposit of crystals were not operated on, but

* THE LANCET, July 23rd, 1904, p. 211.

chronic pancreatitis was found after death. In another case in which the urine gave a similar reaction malignant disease of the pancreas was found post mortem. A clinical diagnosis of cancer of the pancreas was made in two patients whose urine gave many fine rapidly dissolving crystals. In one of these a large mass was found at operation occupying the head of the gland and probably compressing the duct. The clinical symptoms in 14 control cases did not suggest pancreatic disease but the urine gave a well-marked reaction. Of these patients, three were suffering from mumps, two from cancer with secondary deposits, two from disease of the kidney with albuminuria, two from fractured bones, one from peritonitis, one from chronic colitis, and one from pneumonia. A small deposit of crystals, considerably less than in the previous group, was obtained in 35 cases. In three of these the pancreas was probably diseased. One showed a small stone in the common duct and some enlargement of the gland. A history of gall-stone colic was present in the other two, and when examined at operation the pancreas was found to be enlarged and harder than normal. In the remaining 32 a lesion unconnected with the pancreas was found. A deposit consisting of broad, flat, sword-like crystals soluble in 33 per cent. sulphuric acid in from four to five minutes was obtained in 21 cases. Clinically these were all diagnosed as malignant disease of the pancreas but only two were operated on. One died a few days after the operation and the other lived for several weeks but finally died from the disease. 13 are known to have steadily got worse and died at later periods with secondary symptoms from malignant growth. In two a post-mortem examination was obtained and in both the diagnosis was confirmed. The crystals were difficult to secure in several instances and without the exercise of considerable care and patience it is quite possible that no result would have been obtained. In these cases of pancreatic cancer and in many others of suspected pancreatic disease much assistance in diagnosis was derived from a microscopical and chemical examination of the fæces. A few crystals were seen microscopically in the urine from 11 cases, but none of them showed any evidence, either clinically or at operation, of disease of the pancreas. (Fig. 2.)

FIG. 2.

Crystals from the urine in a case of malignant disease of the pancreas.

No reaction whatever was obtained in 93 cases. Two of these died and were examined a short time subsequently to the examination of the urine. The pancreas in both was found to be normal macroscopically and microscopically. 32 were operated on. In nine gall-stones were found in the gall-bladder or cystic duct but the pancreas was said to be normal. In three a calculus was found above the pancreatic portion of the common bile-duct and six showed a biliary concretion floating in the common duct but no affection of the pancreas. No obstruction of the common duct or disease of the pancreas could be found to explain the jaundice present in three cases. In two patients there was said to be pancreatitis when the gland was examined at operation. The remaining 59 cases were not operated on. In eight there was at the time the urine was examined a suspicion of pancreatic disease which the subsequent course of the case dispelled. 51 were control cases examined for the purpose of comparison; two had cancer of the liver, five gastric ulcer, and two ulcer of the duodenum, while the remainder suffered from diseases unconnected with the pancreas.

From the urine of three cases of pancreatitis and two cases of diabetes I succeeded in isolating a substance which gave the reactions of a proteid but none with phenylhydrazin. Solutions of this on hydrolysis with hydrochloric acid yielded a crystalline phenylhydrazin compound resembling that obtained from the urine directly. In consequence of this observation I was led to try the effect of treatment of the urine with mercuric chloride before hydrolysis. In 24 out of 126 cases in which the urine gave a reaction before treatment it was found that the addition of half its volume of a saturated solution of corrosive sublimate entirely prevented the reaction. Three of the patients were suffering from diabetes, and in one, where the pancreas was examined after death, it was found that almost the whole of the glandular substance had been replaced by fibrous tissue. In another the glycosuria had supervened eight and a half years after an operation for pancreatitis. Active pancreatitis associated with obstruction of the common duct was found in 17 cases. In four the pancreas was enlarged and hard but there was no obstruction. The reaction, although not completely prevented, was appreciably diminished in 30 cases. 24 of these were found at operation to have an enlarged and hardened pancreas, and in 11 there was a gall-stone in the common duct. Two were diagnosed as cancer of the pancreas and ended fatally. One case with an affection of the kidney, one with mumps, and one with advanced carcinoma of the breast, showed some diminution in the amount of the deposit. No appreciable difference was observed in the urine of 69 cases. Of these ten were found to be suffering from pancreatitis, which in four was known to be of some standing. In 14 a diagnosis of malignant disease of the pancreas was made. The remainder were cases in which the results of operation or the clinical condition and after-history of the case negatived pancreatic mischief.

With nitric acid (0·25 cubic centimetre to ten cubic centimetres of urine) similar results to those described with hydrochloric acid and sulphuric acid have been obtained, but the reaction has been found to be more difficult to control. Crystals of a kind can be prepared in most circumstances from suitable specimens of urine, but with care those cases in which there were obstruction of the common duct and marked swelling of the pancreas have been found to yield small masses of fine lemon-yellow needles quite distinct from the brownish sheaves with which they were generally mixed. As the excess of nitric acid left after heating cannot be removed as an insoluble salt, and as even a slight excess of alkali has been found to interfere with the subsequent course of the reaction, the fluid is diluted with ten cubic centimetres of urine, made up to 15 cubic centimetres with water and a slightly larger amount of sodium acetate added with the phenylhydrazin hydrochloride than usual. I may here mention that by heating a solution of glycerine with nitric, *not* hydrochloric, acid and neutralising with urea I have repeatedly obtained on treatment with phenylhydrazin an osazone with a melting point of 131° C., and that it was on this fact that the original investigations on the urine in diseases of the pancreas were founded.

It is evident that in phenylhydrazin we possess a most useful reagent for inquiring into variations in the urine accompanying certain changes in metabolism. In the hands of those who have had some experience of its application and the interpretation of the results that may be obtained by its use the test is capable of more than the detection of traces of dextrose in slight or doubtful cases of diabetes, important as this may be. Although advocating a more extended use of this test in the examination of urine I do not wish it to be thought that I am underestimating the value of other reactions or methods of investigations. Like most laboratory methods in the present state of our knowledge it has its limitations and needs to be interpreted in the light of all the available evidence, not only from a complete chemical and microscopical examination of the urine but also from the clinical aspects of the case and in certain circumstances from the investigation of the fæces, or blood, or other "products."

Beaumont-street, W

URIC ACID.

A RATIONAL TREATMENT FOR ITS ELIMINATION, IN THE LIGHT OF RECENT RESEARCH.

BY ROBERT FENNER, L.R.C.P. EDIN., M.R.C.S. ENG.

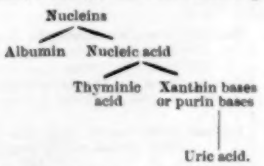
THE causes and treatment of those diseases depending upon an excess of uric acid in the blood and its deposition in the tissues of the body have been shrouded for years in mystery and the recorded theories founded on clinical research are fraught with fallacies. As a subject it is of the utmost importance to the practising physician. In few other troubles are his remedies and treatment so impotent. Many have been the theories but the advance in treatment has been practically *nil*. The main object of all treatment hitherto has been to prevent the accumulation of the salts of uric acid in the system and to favour their excretion, but no attempt has been made to deal with uric acid *per se* or to prevent the formation of the urates. A great variety of drugs have been exploited and are in daily use to rid the system of their presence after their formation. It is much as if the stable door be shut after the horse has disappeared. With all diffidence I hope, on the basis of recent researches by Minkowski, Kossel, and Schmoll, to prove that there is a substance which, by holding uric acid firmly in solution, prevents its deposition in the tissues in the form of salts; that this substance answers the chemical and physiological tests required; and that its exhibition is clinically successful in those cases which depend upon an excess of uric acid in the blood.

Gout has been generally considered to be an acute arthritis associated with a deposit of crystalline sodium biurate in the joints affected and with a circulation of an excess of urates in the blood. According to the usually accepted theories the excess of uric acid in the blood is due either to (*a*) increased production or (*b*) decreased elimination by the kidneys. Garrod adopted the second view. Roberts[1] gave it as his opinion that the sodium salt present is the quadriurate and if this is in excess or not rapidly eliminated it forms sodium biurate by coming into contact with sodium carbonate, but Fischer conclusively proves that the quadriurates are a mixture of the urates and uric acid in its free state. Murchison[2] thought that there was excessive formation of uric acid through deficient oxidation of the ingesta owing to functional inactivity of the liver and therefore he considered uric acid a half-way product in the oxidation of albuminous foods. Latham suggested the theory that the increase of uric acid was due to the imperfect metabolism of glycocine in the liver.

Haig[3] has given us a most interesting and entertaining volume upon uric acid, in which almost all "the ills that flesh is heir to" are stated to be due to some form of uric-acid poisoning and these may be divided into two groups: (*a*) gout and (*b*) collæmia. He advances the theory that "gout is relieved by solvents, collæmia by retentives. Both are prevented, relieved, or wiped off the record by a uric-acid-free diet. Gout is accompanied by a quick circulation, raised temperature, and a few granules in the blood. Collæmia is accompanied by a slow circulation, subnormal temperature, and many granules in the blood—both are the results of excess of uric acid in the body and that excess is produced by swallowing it in the food." In collæmia he thinks that uric acid is present in the blood as a colloid or gluey material and mechanically blocks the capillaries, causing: "1. High blood pressure in the arteries. 2. Increase in the heart's work. 3. Obstruction of the capillaries. 4. Defective combustion." His dietetic treatment is important, as he certainly aims at the reduction in quantity of the uric acid itself, for he only allows his patients those foods which are calculated to sustain life in birds and rodents. One's experience in practice is that patients will not endure a treatment which deprives them of most of those foods which make ordinary life worth the living, and for whose digestion our organisation has been fully adapted by a beneficent Creator. His theory might hold good in the case of a gouty person in whom it is all-important to restrict the formation of free uric acid but in a healthy person the foods which he forbids are absolutely necessary for sustained and vigorous life, where the ingestion of nucleins is followed by an adequate metabolism. As will presently be proved the uric acid not only becomes perfectly soluble in the blood stream but is maintained in that condition and prevented from being deposited in the tissues by a substance formed at the same time and with which it unites in indissoluble bonds. The important part of Haig's treatment is his clear insistence that it is the irritating presence of uric acid itself in a fibrous tissue, "either in solution or suspension," that is the cause of trouble in his (*a*) group, and the excess of uric acid in the blood the cause of trouble in his (*b*) group. In the absence of all scientific proof and the results of research his theory must remain a pious opinion.

Before considering the rôle that uric acid plays in the production of gout it is important to consider its relationship to nutrition. In striking contrast to urea uric acid requires for its solution 16,000 parts of cold water; it is therefore clearly impossible for uric acid to be present in the blood as an acid unless it is in combination with a substance which makes it easily soluble. It is dibasic and has the formula $C_5H_4N_4O_3$. It forms two classes of salts of which the solubility is almost equally deficient; these are the urates and the biurates: (1) Normal = 2 atoms of H replaced by 2 of Na = $C_5H_2Na_2N_4O_3$ = urates. (2) Acid = 1 atom of H replaced by 1 of Na = $C_5H_3NaN_4O_3$ = biurates. This latter is the chief constituent of the pinkish so-called "lateritious" deposit. It has been proved that uric acid is not made in the kidneys; when these have been removed it continues to be formed and accumulated in the organs, notably in the liver and spleen. In birds, when the liver has been removed, uric acid is scarcely found at all, its place being taken by ammonia and sarcolactic acid, therefore we may assume that uric acid is formed synthetically in this system; of this important fact I shall write later. The conditions which lead to an increased elimination of uric acid in the urine are: 1. An increase of meat diet and a diminution of oxidation which may be brought about by a sedentary life. 2. An increase of white corpuscles in the blood as in leucocythæmia. The leucocytes contain large quantities of nuclein and nuclein yields the xanthin bases to which uric acid is very closely related.

Uric acid had for long been considered a product of the imperfect oxidation of albumin before the formation of urea. Differing from Garrod, Bouchard[4] suggested that its increase in the serum and in the urine was due to defective oxidation and that this was the pathogeny of gout. But careful chemical research, the discoveries of Fischer[5] as to the connexion of uric acid with the constituents of the xanthin bases, and the results of physiological researches by Kossel[6] all point to the true origin of uric acid which is totally at variance with the hitherto accepted theories. There are three great classes of proteids: 1. Albumin, the protoplasm of the living cell containing no phosphorus. 2. The paranucleins, the properties of which are similar to the albuminoid bodies except that they contain a small percentage of phosphorus. They are represented by the yelk of egg and the casein of milk. 3. The nucleins, which constitute the chromatin fibres of the nucleus containing a fair proportion of phosphorus. By the splitting up of the nucleins, as shown by Schmoll, we obtain: (*a*) albumin (as in protoplasm); and (*b*) the nucleic acid group: thus



The nucleins when split up by digestion yield simple albumin and nucleic acid, nucleic acid again yielding thyminic acid and the xanthin bases. Fischer[7] after

[1] Roberts: On the Chemistry and Therapeutics of Uric Acid, Gravel, and Gout, 1892.
[2] Murchison: Clinical Lectures on Diseases of the Liver, 1877.
[3] Haig: Uric Acid as a Factor in the Causation of Disease, 1896.
[4] Bouchard: Leçons sur les Maladies par Ralentissement de la Nutrition, third edition, Paris, 1890.
[5] Fischer: Synthesen in der Puringruppe, Berichte der Deutschen Chemischen Gesellschaft, 1899, Band xxxii.
[6] Kossel: Ueber Nucleinsaeure, Centralblatt für die Medicinischen Wissenschaften, 1893. Kossel and Neumann: Ueber Nucleinsaeure und Thyminsaeure, Zeitschrift für Physiologische Chemie, 1896.
[7] Loc. cit.

TABLE I.—CASES OF ACUTE GOUT.

Case.	Sex.	Age.	Previous history.	Present attack.	Dose.	Remarks.
1	M.	46	Had had repeated attacks of acute gout in foot and knee extending over the last three years.	Right metacarpo-phalangeal joints swollen, inflamed, and painful.	4 grains three times a day.	Cured in five days; previous attacks usually lasted three weeks.
2	M.	42	Had had two or three previous attacks.	Left metacarpo-phalangeal articulations attacked simultaneously.	5 grains three times a day.	Perfectly well in four days; previous attacks had lasted from seven to ten days.
3	M.	45	Subject to acute gouty synovitis of right knee and pharyngitis.	Painful inflammatory swelling of knee.	4 grains every four hours.	The knee was well in five days and the pharyngitis yielded quickly to this treatment.
4	M.	55	Had suffered with various manifestations of acute gout at intervals during the past six years. Had traces of albumin and a quantity of sugar in urine.	Acute dyspepsia with vomiting and gouty pharyngitis.	"	The acute symptoms had disappeared in five days; on the ninth day sugar reduced from 3·13 grains per ounce to 1·36 grains per ounce. Has had no more attacks since taking 4 grains of thyminic acid twice a day. The sugar has practically disappeared.
5	M.	68	Had been subject to gout for years, having had several attacks of acute arthritis; usual duration of attack from three to four weeks.	Acute arthritis of left knee.	4 grains every four hours begun on second day of attack.	Cured; inflammation disappeared in four days.
6	F.	65	Had had several attacks of gout during the past four years; usual duration several weeks.	Severe attack in left foot and ankle.	4 grains three times a day begun on third day of attack.	Cured on the eighth day of attack; the patient discontinued thyminic acid and two months afterwards had another attack which was cured as quickly.
7	M.	54	Had repeated attacks of articular gout lasting from 10 to 15 days.	Acute arthritis of left ankle.	4 grains three times a day.	Cured in four days.

TABLE II.—CASES OF CHRONIC GOUT.

Case.	Sex.	Age.	History of illness.	Dose.	Remarks.
1	F.	70	Had suffered for many years with gouty arthritis of the finger-joints and knees and latterly with obstinate eczema and bullæ of the hands.	4 grains three times a day after food.	Great improvement after one month's treatment; able to walk with comfort and to use the hands; at the end of six weeks the eczema and bullæ had entirely disappeared and on small doses has kept in good health since.
2	M.	37	Tender swelling in the middle metacarpo-phalangeal joint of the right hand.	4 grains three times a day.	Under prolonged use of thyminic acid the general condition improved, the swelling diminished, and the tenderness disappeared.
3	F.	45	Swelling and tenderness of the feet.	"	In one week the condition was so much improved that she could walk with comfort.
4	F.	50	Stiffness in joints and back; gouty enlargement of finger-joints; excess of uric acid and urates in urine.	7 grains three times a day.	After three weeks there was an increased output of uric acid, the urates disappeared, and the stiffness was much improved.
5	F.	69	Finger-joints enlarging for some years, at times becoming inflamed and painful, several tophi showing; two or three months before treatment both knees became swollen and painful.	"	Well-marked improvement in a fortnight, hands quite free from pain, knees have recovered shape and mobility, and all the joints are more flexible.
6	F.	65	Sub-acute arthritis, especially of knees. Acid dyspepsia and constipation.	4 grains three times a day.	Arthritis improved steadily, also the dyspepsia.
7	M.	63	Gouty pains in left hand, tophi on little finger-joints of both hands, eczema on arms and thighs.	7 grains three times a day.	Improvement very marked, eczema disappeared.
8	M.	35	Had suffered with extensive psoriasis of chest, back, arms, and legs, which had resisted all treatment for several years.	8 grains three times a day.	In a fortnight there was marked improvement; in two months the psoriasis had disappeared but patient being a careless liver it recurred; has again almost disappeared under further treatment by thyminic acid, this time supplemented by 14 days' Zittmann's treatment.
9	M.	57	Gouty glycosuria occurring in the course of an attack of laryngitis; amount of sugar = 8 grains to the ounce.	4 grains three times a day.	The sugar gradually diminished in quantity and entirely disappeared in 14 days; has not recurred. The patient takes occasional doses of thyminic acid.
10	M.	46	Gouty glycosuria. Sugar = 29·14 grains per ounce. A great gourmand and an alcoholic.	8 grains three times a day.	In one month the amount of sugar fell to 8·75 grains per ounce; in two months to 3·64 grains per ounce. Now residing abroad, in good health.
11	F.	43	Suffered from obesity, periodical headaches, sleeplessness, and dyspepsia.	4 grains three times a day.	After three months' treatment the patient had lost nine pounds in weight, the headaches, dyspepsia, and sleeplessness had disappeared, and she was able to take regular walking exercise. She continues to take thyminic acid (four grains twice a day).
12	M.	48	Gouty laryngitis and eczema of hands. Tophi present on ears.	"	Cured after two weeks' treatment, but patient being a careless liver symptoms again returned but are quickly disappearing under treatment.
13	M.	46	Had suffered with repeated attacks of "gravel" for the past five years.	"	After six weeks' treatment, during which time he was free from pain, he had an attack of renal colic which ended in the passing of a small uric acid calculus; since then he has been perfectly well.

carefully studying the chemical composition of uric acid and the xanthin bases, conceived them to be derivatives of purin and called them "the purin bodies." The most simple representative of the purin bodies is hypoxanthin, which contains in its molecule one atom of oxygen, and by adding first one atom of oxygen and then two to this substance we obtain successively xanthin and then uric acid, or if the amido group be introduced into the purin nucleus adenin and guanin result, the latter containing one atom of oxygen, the former none. Therefore starting from purin bases we can, by simple chemical changes, obtain uric acid. These purin bodies are found in the organism wherever there are nucleins. The xanthin bases found in the human body are principally adenin and guanin; the bases can thus be combined with thyminic acid to form nucleic acid, as is shown by the following rough scheme: nucleic acid = adenin + guanin + thyminic acid.

Remembering that nucleic acid, by splitting up, yields, ultimately, uric acid and thyminic acid, and basing their theory on the presence of thyminic acid with the intra-organic formation of uric acid, Minkowski[8] and Kossel[9] advanced the hypothesis that thyminic acid is the substance which combined with uric acid renders the latter soluble and that this combination cannot readily be broken up and together they form a product no longer precipitable either by acids or heavy metals, in fact, uric acid cannot be recovered after it has once combined with thyminic acid without prolonged boiling. Granting that this supposition is correct we can at once form an exact idea of the action of uric acid in the body. As soon as formed uric acid combines with thyminic acid. In this combination it circulates in the blood and this prevents its detection in normal serum. It is excreted by the kidneys, partly in its combined state and partly after the breaking up of this combination. The presence of thyminic acid in health explains why uric acid in the urine is not entirely precipitated by acids. Weintraud[10] has demonstrated the connexion between nucleic and uric acid by showing that after ingestion of thymus gland extract, which is essentially rich in nucleins, the excretion of uric acid rose from 0·5 gramme to 1·8 grammes and 2 grammes in 24 hours; Hess and Schmoll[11] have shown that the nucleins were the sole origin of uric acid. It was shown that in a healthy person, on a regulated diet, the only way in which the excretion of uric acid could be altered from its normal percentage was by giving foods containing purin bases. The administration of albuminoids brought about no alteration in the quantity excreted. Garrod[12] established the presence of uric acid in the gouty blood serum and the relation between a gouty attack and deposit of uric acid in the joints. He explained the presence of uric acid in the serum on the hypothesis that it was merely retained there and the deposits were explained in a similar way. There is, however, nothing to indicate any connexion between the excretion of uric acid and its presence in gouty serum. It has been proved that in the healthy physiological state uric acid cannot be found in the blood serum. It is not formed in the kidneys, and before its excretion it has to be carried away in the blood stream. Thus all analyses are tainted with error, since we cannot detect uric acid in combination with thyminic acid, and in no other form does it exist in the blood in a physiological state. The presence of uric acid in gouty fluids and tissues may thus be explained by the absence of a proper proportion of thyminic acid combined with it and keeping it in solution. In the normal state uric acid is produced by the oxidation of the purin bases; in the gouty state the combination with thyminic acid does not take place. If thyminic acid be given to gouty people uric acid combines with it, as has been experimentally proved by Schmoll.[13] It is possible, therefore, that in gout uric acid has an origin other than from the nucleins in which thyminic acid is not at the same time produced.

Minkowsky has clearly demonstrated the synthetic production of uric acid in birds and Wiener[14] has established it in animals. The former has proved that all the acids with a chain of three atoms of carbon and two groups of acids can be transformed into uric acid by birds in the presence of urea. This synthetic formation of uric acid is of a minimum quantity and probably always leads to the formation of nucleins, but in the gouty diathesis this synthesis stops at uric acid and it is this amount of acid the presence of which we can prove. In nephritis the presence of uric acid might be due to the fact that the combination of thyminic acid and uric acid is destroyed in the kidneys. Obviously this might also explain its presence in gouty serum but the results of Schmoll's experiments conclusively prove that the excretion of uric acid in gout is enormously increased by the ingestion of thyminic acid, thus refuting the above hypothesis. We may thus express the pathogeny of gout. Uric acid in a gouty organism is formed synthetically, whilst in the normal state it is formed by oxidation; in the latter case thyminic acid, which is always present, combines with uric acid, and it is in this combination that uric acid circulates in the blood. The absence of thyminic acid in gout explains how uric acid is precipitated and found in the serum. Schmoll has made a series of experiments proving the pronounced influence of thyminic acid on the excretion of uric acid in gout; it was increased in every case from 25 to 50 per cent. Another series of experiments on a normally healthy man showed that the ingestion of thyminic acid produced no result.

What, then, are the properties of this substance which holds uric acid in such a grip that, in health, no splitting up can occur and consequently no urates can be deposited in the tissues or joints? A combination so firm that uric acid cannot even be detected in the blood! I have preferred to call this substance "thyminic acid" rather than the "thymic acid" of Schmoll (which might lead to confusion with the products of the herb thyme) or the somewhat clumsily called "nucleotin-phosphoric acid" of Minkowsky and Walker Hall.

Walker Hall, in his valuable handbook on "Purin Bodies," p. 139, says: "An interesting outlook in relation to this question is the action of some bodies which hinder or prevent the precipitation of uric acid and xanthin bodies from their solutions. Minkowsky some time since remarked upon this property of nucleotin phosphoric acid and has administered this substance to patients with the view of maintaining the circulating purins in solution and preventing uratic infiltration. At present, however, nucleotin phosphoric acid is not easily obtainable and very few results are recorded." In an interesting discussion on the Chemical Pathology of Gout[15] A. E. Garrod says: "We do not know in what combination uric acid exists in the blood of the gouty; and I would venture to suggest that this question offers a promising line for investigation—an investigation which is by no means easy at the present day when venesection is no longer in fashion."

Thyminic acid is an amorphous powder, brownish-yellow in colour, soluble in cold water, slightly deliquescent, faintly acid in reaction, and almost tasteless; Minkowski gives its formula as $C_{20}H_{46}N_9O_{15}.2P_2O_5$; Kossel as $C_{10}H_{23}N_3P_2O_{12}$. It has the very interesting property of holding in solution practically its own weight of uric acid at a temperature of 20° C., while this property of retention is increased by 50 per cent. at the blood temperature of 37° C. This can easily be confirmed. A slightly alkaline solution of sodium or potassium urate is prepared in a test-tube, care being taken to use only a very small quantity, one-eighth of a grain or even less. In another test-tube a solution is made of a somewhat larger quantity of thyminic acid. Half of the contents of each of these test-tubes is then poured into a third and shaken up together; if the mixture be strongly acidified it will be noticed that the uric acid is held firmly in solution and is not precipitated. If, on the other hand, the test-tube containing the remaining half of the uric acid solution be filled up with water and rendered acid the uric acid will either come down as an amorphous precipitate, or if the solution be weak crystals of uric acid will be slowly formed. According to Kossel, Goto,[16] and others the "retention property" of thyminic acid is increased when a small quantity of nucleic acid is present. Thyminic acid may be given internally as a powder, in an elixir, or in the form of compressed tablets. Its administration has not, in my experience, been attended by any toxic or untoward symptoms. It is best given with or immediately after meals, in doses of from four to seven grains; in solution it has practically no incompatibles.

During the past 16 months I have had under my care a

[8] Minkowski: Die Gicht, 1903.
[9] Loc. cit.
[10] Weintraud: Berliner Klinische Wochenschrift, 1893.
[11] Hess and Schmoll: Archiv für Experimentelle Pathologie und Pharmakologie, 1896.
[12] Garrod: The Nature of Gout, 1861; "Gout," in Reynolds's System of Medicine, 1896.
[13] Schmoll: Archives Générales de Médecine, No. 39, 1904.
[14] Wiener: Beiträge zur Chemischen, Physiologie, und Pathologie, 1902, Band iv.
[15] Brit. Med. Jour., Sept. 24th, 1904, p. 743.
[16] Goto: Zeitschrift für Physiologische Chemie.

great number of suitable cases for whom I have prescribed the thyminic acid prepared by Messrs. Allen and Hanburys, Limited. I usually order this to be taken in doses of from four to eight grains in the tablet form after meals; during its exhibition I have prescribed no other drug and the results have been most gratifying. In acute cases it quickly cuts short the inflammatory condition and leads to rapid convalescence; in chronic cases prolonged administration of the drug has led to marked improvement in nearly every case. I have been particularly pleased with the results of treatment in cases of gouty glycosuria, gravel, gouty eczema, and obesity. The accompanying cases have been selected at random from my own practice and from those of Dr. A. Butler Harris, Dr. W. M. Abbot Anderson, and Dr. Eugene F. Cronin, to whom I am indebted for having kindly sent me a record of many cases treated by them. I must also acknowledge my indebtedness to Mr. Alfred C. Chapman, F.I.C., F.C.S., for much valuable help received in difficult chemical research and experiments.

Buckingham-gate, S.W.

NOTE ON THE RECENT OUTBREAK OF TYPHOID FEVER AT LINCOLN.

BY E. CECIL CLEMENTS, M.R.C.S. ENG., L.R.C.P. LOND.

THE Lincoln epidemic of typhoid fever is fresh in the memory of most of us and although perhaps sufficient time has not yet elapsed to enable us to form a critical judgment exactly as to what we may learn from it, nevertheless I venture to think that the following observations, based upon 192 cases, even if somewhat crude, will not be valueless.

The Drill Hall temporary hospital was opened on Feb. 9th and I had under my care in the hospital 192 cases. 70 patients were admitted in four days; in the majority of them no clinical history could be obtained and it was thus impossible to estimate with any degree of accuracy the stage of the disease upon admission. Of the 192 patients 28, or 14·5 per cent., died. Of these 28 deaths eight were due to perforation. One case was treated surgically, the result being fatal. Eight deaths were due to hæmorrhage from the bowel, three deaths were caused by meningitis, and four by pulmonary complications. In only four cases did death follow an uncomplicated course. In 28 cases, or 14·5 per cent., relapses occurred; three of these had a second relapse and one had a third relapse. All the patients who experienced relapses are now convalescent. 44 patients presented marked cerebral symptoms; five of these, of whom three died, had undoubted meningitis. One patient was the subject of chronic pulmonary tuberculosis, having a cavity in the right apex. She recovered and the tuberculous condition seems at the present time improving. Four patients were pregnant and none of these aborted or miscarried. 29 cases ran a pyæmic course, characterised by numerous abscesses requiring surgical treatment. In ten cases the normal subsidence of fever was interrupted by a rigor which in most cases was severe. The patient would complain of feeling cold, violent shivering, and the temperature would run up to 103° or 104° F., settling down to subnormal within 24 hours and remaining there. The explanation of this would be interesting. Might it be due to separation of sloughs, as in one case where sloughs were recognised in the stool the temperature immediately came down to normal, but no definite rigor was noticeable?

Of the sequelæ observed in this epidemic up to the present time the most important was thrombosis, which occurred in nine cases. Ten patients suffered from suppuration of the ear; in four of these the previous history showed this affection to be definitely post-typhoidal. In one patient loss of memory and melancholia occurred three weeks after discharge from the hospital. Both these symptoms disappeared after three weeks' rest and sea-air. Three cases showed signs of slight peripheral neuritis. One patient is still under treatment for choroiditis.

The routine treatment that we adopted can best be considered under the following heads:—

Drugs.—An extensive trial was given to intestinal remedies such as salol, urotropine, &c. In no instance can I record any definite advantage from their use and in the later cases they were discarded. In cases of threatened cardiac or respiratory failure small doses of tincture of digitalis (from five to ten minims), but if sickness were present liquor strychninæ (from three to five minims), were given. It was found, however, that strychnine was apt to cause hunger. The sedative which after many trials was universally adopted was opium, which was generally supplemented by the application of icebags to the head. The form of opium used was the liquid extract. Morphine and chloral were nothing like so constant in their sedative effects and were after a preliminary trial discarded. Phenacetin was used in ten-grain doses as a sedative and antipyretic, either alone or combined with sal volatile or citrate of caffeine. The antipyretic action of this drug was very marked and was always accompanied by profuse diaphoresis. When combined in the above manner no marked depression followed its use and I have often seen it cause a fall of temperature (four or five degrees) about four hours after and be followed by a refreshing sleep. Tepid sponging was adopted as a routine practice when the temperature reached 104°. Its result was very varied and sometimes only lasted for an hour. Speaking generally, it was least useful in children and young adults. The highest temperature observed in a patient who recovered was 105·8°. Stimulants were used sparingly, only brandy in small doses being administered when necessary.

Purgatives.—Perhaps the mention of this class of drug may cause some surprise, but a very marked feature of the Lincoln epidemic was the absence of diarrhœa. Of 192 patients, only 24 suffered from anything approaching diarrhœa. Of these 24, in six patients the diarrhœa was profuse, in 11 it was medium, and in seven it was slight. More that 70 per cent. of the patients suffered from persistent constipation and this was treated by soap-and-water or olive-oil enemata or by the administration of castor oil by the mouth. These measures invariably relieved the symptom in question and in no case did any untoward result follow their use.

Hæmostatics.—As 33 cases of bad hæmorrhage occurred with eight deaths one had ample material upon which to estimate the relative value of hæmostatics. Various new drugs, such as adrenalin, were used. These preparations did not give very satisfactory results and were eventually discarded in favour of pilula plumbi cum opio (B.P.).

Dietetics.—The dietetic treatment of typhoid fever is a subject upon which so much has been written that if I had not what I believe to be a fresh experience to record my remarks wou'd have been very brief. It frequently happened that during what was estimated as being the third week of typhoid pyrexia the patient's strength was at the lowest possible ebb. In these cases it was felt that in addition to the use of stimulants, which on account of their tendency to increase the cerebral symptoms had to be used with great caution, some strengthening of the milk diet must be resorted to. In this connexion an extensive trial was first of all made with a number of so-called bland meat proteid, albumose, and peptone preparations. It was found that these were ill borne by the patient and, in the main, were followed by an increase in abdominal pain and distension, in most cases culminating in diarrhœa, sickness, and even an increase in pyrexia. Subsequently a trial was made of various milk foods, especially of those consisting of either simple milk proteid or foods the essential basis of which was milk and farinaceous material partially or entirely converted by the action of a ferment into a soluble form. My experience with these latter foods was that they were of distinct value after the temperature had been normal for from six to eight days. I made several attempts to use them at an earlier date during the continuance of slight pyrexia but invariably found that they caused abdominal distension and discomfort, and in two cases definite increase of pyrexia. I also determined to give sanatogen a trial. It was given in two teaspoonful doses three or four times a day and was added to the milk according to the directions supplied. The cases in which it was at first used may be divided into three classes; first, those whose temperature had been normal for a few days before the treatment was started; secondly, those patients who still had a continued evening pyrexia ranging from 100° to 101°; and thirdly, those in the height of pyrexia. Owing to the extreme difficulty of obtaining accurate clinical histories it is impossible to say at exactly what period of the disease this second class was but apparently it ought to have been convalescence but for the severe asthenia. In the first class

of patients, about 15 in number, the condition improved rapidly, but no deduction of value can be drawn from the fact, as the patients were convalescing. In the second class of patients, some 20 in number, the temperature range became less and the asthenia improved. So far as concerns the third class there was at any rate no increase in pyrexia or gastro-intestinal disturbance.

Lincoln.

CHARCOT'S DISEASE OF THE ANKLE IN A CASE OF GENERAL PARALYSIS OF THE INSANE.

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THE following case of Charcot's disease of the ankle occurring in a man with symptoms of early general paralysis of the insane met with in the practice of one of us seems worthy of being recorded.

The patient, aged 37 years, complained of swelling of the left ankle together with weakness of the foot and some pain on walking. The history of the case showed that the patient had led a dissipated life and until the last six months, during which he had been a teetotaler, he had for years consumed upwards of a pint of spirits a day. At the age of 27 years he had had an attack of gonorrhœa and when he was 32 years of age he had contracted syphilis. A year later there was a sudden onset of cerebral thrombosis which left him partly paralysed on the right side. The paralysis lasted for several months and right-sided movements were still performed awkwardly. For the last three years he had had shooting pains in the shoulders, the shins, and the feet; the pain used to come on suddenly and to last for about half a minute. Six months ago his memory began to fail and for two or three months he had complained of precipitate micturition and occasional incontinence of urine. Three months before coming under observation his left ankle suddenly and without trauma became swollen. At first there was some pain but this soon subsided. The ankle remained swollen and was weak when weight was put upon it.

On examination the patient was found to be a well-nourished, powerfully built man. His mental condition was one of childishness; he was cheerful, readily interested, and on account of his simplicity became the butt of his friends. The speech was slow, awkward, and blurred, but no syllables were missed and there was no aphasia. The special senses were normal, there being no optic atrophy. The eyes moved consensually in all directions with a slight tremor on extreme deviation. The pupils were equal and of normal size; they reacted feebly to light and normally on accommodation. There was no anæsthesia of the face and the muscles of the jaw were normal. In repose the face was rather vacuous and expressionless, but on being addressed his face lighted up. The frontalis and orbicularis muscles acted equally and well; voluntary action of the zygomatic muscles was unequal, being more marked on the left side. When smiling the right side of the mouth always moved before and more strongly than the left. The palate was normal. The tongue was not atrophic; it deviated to the right and its movements were spastic. There was some general slight weakness of the right arm; this was especially marked peripherally in the finer movements of the hand which were all stiff and awkward. The movements of the left arm were imperfect but power was good. The respiratory movements were more marked on the right side both above and below. The abdominal muscles all moved well but were a little spastic. There was considerable rigidity of the legs, rather more marked on the right side than on the left; in the left leg there was slight atrophy of all the muscles below the knee. The muscles of both legs were weak but those of the left leg much more so than those of the right. The muscle sense was very deficient in the left leg but was normal elsewhere. The left ankle-joint was much swollen and the foot was displaced. The malleoli were greatly thickened and the distance between them was increased. The astragalus also showed thickening, as did the ligaments and the synovial membrane of the ankle-joint. There was slight excess of fluid in the joint. No osteophytes could be felt. The foot as a whole was displaced outwards and the sole was markedly everted. The ankle could not be flexed to a right angle but it allowed of full extension. The foot could be inverted normally and everted to much beyond the normal. Manipulation of the foot caused no pain and there was no tenderness. On passive movement some bony crepitus could be felt. No other joints were affected. The arm-jerks were all brisk, the right being more so than the left. The right abdominal reflex was absent and the left was diminished. The right knee-jerk was much increased; the left was also somewhat increased. There was slight ankle clonus on the right side but none on the left. The left ankle-jerk was present. The right plantar reflex was typically extensor and the left was extensor with sharp response. Micturition was precipitate but there was no incontinence. Defæcation was normal.

As regards the ankle-joint there can be little doubt that it was of the type of arthropathy described by Charcot in certain nervous diseases. The disease affected a single large joint came on suddenly without signs of acute inflammation and without marked pain, and at the time when the case came under observation there was great structural change in the osseous and ligamentous components of the joint, which was much enlarged and greatly deformed and yet was free from pain and tenderness. The chief point of interest was to determine what was the nervous disease underlying the affection of the ankle. The commonest diseases which are associated with Charcot's disease of the joints are tabes, multiple neuritis, and syringomyelia, but a careful examination of the patient sufficed to exclude the presence of these conditions. Clearly the hemiplegia was not a direct causal factor in the joint change, for the paralysis had been confined to the right side, whilst the affected joint was on the left. The patient gave a history of progressive mental impairment, shooting pains, and precipitate micturition, and on examination there were found Argyll-Robertson pupil and besides the signs of old hemiplegia some evidence of generalised spasticity. These occurring in a patient who has suffered from syphilis suggest a diffuse cerebral degeneration such as characterises general paralysis of the insane.

Birmingham.

FRACTURE OF THE OS PENIS IN OTTERS.

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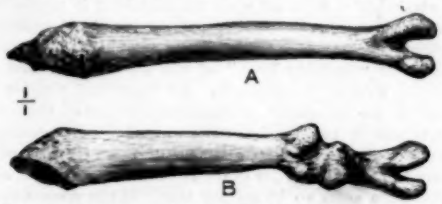
THE otter (*Lutra vulgaris*), like so many other mammals belonging to the order carnivora, possesses a bone in its penis. This bone (represented of natural size in the accompanying illustration) is situated at the end of the penis and the two divergent terminal knobs are invested with the



Two penile bones from otters. A, The normal bone. B, One that has sustained a fracture and has united soundly.

reflexion of the prepuce which covers the glans; the termination of the urethra emerges in the interspace of what may, for convenience, be called the terminal condyles of the bone. The penile bone of the otter is extremely hard and Mr. Gerald Uthwatt, who is keenly interested in otters and in hunting them, assures me that it is not uncommon to find examples of this bone which have been broken and healed. He further supported his statement by sending me a specimen. It is difficult to account for such a fracture unless one knows the habits of otters. It appears that when these animals fight each tries to seize the penis of its adversary and when we remember what powerful jaws and sharp teeth otters possess

the damage to the bone is not a matter for surprise. The normal bone and the damaged, but repaired, specimen are in the museum of the Royal College of Surgeons of England.

Brook-street, W.

Reviews and Notices of Books.

Diseases of the Liver, Gall-bladder, and Bile-ducts. By H. D. ROLLESTON, M.A., M.D. Cantab., F.R.C.P. Lond., Physician to St. George's Hospital, London; formerly Examiner in Medicine in the University of Durham; and Fellow of St. John's College, Cambridge, England. Philadelphia, New York, and London: W. B. Saunders and Company. 1905. Pp. 794, with 97 figures in the text and seven coloured plates. Price 25*s.* net.

As a work of reference on the subjects dealt with in it Dr. Rolleston's book leaves little to be desired. It is conveniently arranged and easy of reference, the symptoms are in all cases well described, the morbid anatomy and pathology of the various conditions are exhaustively discussed in a luminous and critical manner, while diagnosis and treatment are given in considerable detail. The work is enriched by abundant brief descriptions of illustrative cases, many of them from the author's own personal experience, and in each case with reference to the literature. Dr. Rolleston has wisely refrained from adding a long bibliography to his volume but gives at the foot of each page references to the authorities quoted in it, a much more useful method in a work of reference. As might be expected from a physician of Dr. Rolleston's wide pathological experience, the morbid changes observed in each condition are very carefully described, often with great detail, and are illustrated by a large number of excellent figures, microphotographs, and coloured plates, for, as Dr. Rolleston observes in his preface, "without a grasp of these (morbid changes) it is impossible to make a rational diagnosis, to treat the clinical manifestations in a satisfactory manner, or to give a reliable prognosis." In his discussion of the pathology of many obscure conditions Dr. Rolleston is always interesting and frequently original and suggestive in his ideas. He rightly attributes great importance to the antitoxic or protective function of the liver—that is, its power of arresting poisons absorbed from the alimentary canal, or at least of rendering them innocuous, and to "hepatic insufficiency" or interference with this function he attributes many of the symptoms of hepatic diseases, notably in cirrhosis and complete biliary obstruction.

In reviewing a work of such magnitude it is impossible to do more than refer to some of the principal sections. Excellent accounts are given of the condition of emphysematous or "foaming liver," of the corset liver, and of wandering liver or hepatoptosis. An important chapter is devoted to the discussion of functional disease of the liver. Disturbances of hepatic functions are admittedly common in hepatic disease but the question of the existence of a primary functional disorder of the liver is still unsettled, and Dr. Rolleston sums up by stating that "in the present state of our knowledge its existence is almost impossible to recognise with accuracy." Diseases of the vessels of the liver are considered in some detail, including thrombosis of the portal vein and suppurative pylephlebitis, which is considered separately from portal pyæmia or multiple embolism from the portal vein radicles. In his discussion of chronic venous congestion of the liver or "nutmeg liver" we are glad to find that Dr. Rolleston doubts the existence of a "cardiac cirrhosis" and regards the fibrous tissue found in such cases as a secondary fibrous replacement following the atrophy of the liver cells in the central part of the lobule.

Acute congestion of the liver, acute hepatitis, and tropical abscess are described and differentiated from one another. In the account of tropical abscess its relation to dysentery and the part played by the amœba coli in its pathogenesis are included and a hæmatogenous origin is suggested for some of the pulmonary abscesses found complicating hepatic abscesses, since amœbæ have been found in the pulmonary artery.

The account given of universal chronic perihepatitis lays great stress on the frequency of its association with arteriosclerosis and granular kidneys, and the rarity of its association with true cirrhosis of the liver. The distinction between this condition and that of cirrhosis so ably worked out by Dr. W. Hale White is clearly defined.

The section dealing with cirrhosis is very exhaustive, extending to over 160 pages, and is one of the best parts of the work. A classification of cases of cirrhosis capable of being used in practice is much to be desired, since the anatomical classification into multilobular, monolobular, pericellular, mixed and sporadic given by Dr. Rolleston is, as he himself points out, chiefly of pathological interest. For clinical purposes he describes two principal types—(1) ordinary or common portal cirrhosis with hæmatemesis early in its course and ascites late, and with multilobular fibrosis of the liver and only moderate enlargement of the spleen; and (2) the biliary type with jaundice for its most marked feature, both liver and spleen being very large and the fibrosis in the former being mixed, diffuse, or monolobular.

In discussing the rôle of alcohol Dr. Rolleston comes to the conclusion that it "gives rise to cirrhosis in a secondary manner either by leading to the production of sclerogenic poisons or by enabling such poisons to have full sway on the liver," and that other factors must also be taken into account, since alcohol *per se* simply leads to fatty degeneration. Again, the possibility of cirrhosis, or at any rate some forms of cirrhosis, being due to micro-organisms must always be borne in mind, as also that poisons and perhaps micro-organisms may reach the liver by the hepatic artery or in the fœtus by the umbilical vein. Many of the symptoms, Dr. Rolleston suggests, may be due to hepatic insufficiency—notably some of the hæmorrhages, the ascites, the dropsy, and the final toxæmia. The processes of compensation, especially the new formation of the hepatic cells forming what Dr. Rolleston calls the pseudo-bile canaliculi and the collateral circulation between the portal and systemic venous systems, are described and the indications for, and limitations of, the Talma-Morison operation are discussed in some detail. Dr. Rolleston is of opinion that this collateral circulation may become too free and so permit the circulation of toxic substances absorbed from the intestines without allowing them to be dealt with first in the liver. The account of biliary cirrhosis is a useful summary of what is at present known about that comparatively uncommon disease. The name is perhaps an unfortunate one but has become firmly established and is preferable to the ambiguous term hypertrophic cirrhosis sometimes applied to it.

The sections on tubercle, syphilis, and malignant disease of the liver are each of them exhaustive; that on actinomycosis or streptothricosis is, however, less detailed. In the account of congenital syphilis we are glad to find an account of what Dr. Rolleston calls parasyphilitic cirrhosis—that is, a polylobular cirrhosis occurring in syphilitic children induced by other causes—an important condition which has hitherto attracted very little notice. Diseases of the gall-bladder and bile-ducts form the concluding sections of the volume and are carefully and systematically described. The part played by catarrhal and infective processes in the production of gall-stones is carefully considered in the section on cholelithiasis.

A few typographical errors have escaped correction and the adjective "tuberclic" used on p. 191 does not commend

itself to us but the book is well written and well produced and we can cordially recommend it as a work of reference containing a mine of valuable information and of suggestive ideas.

Diseases of the Blood (Nothnagel's Encyclopedia of Practical Medicine; English edition). By Professor Dr. P. EHRLICH, Professor K. VON NOORDEN, Dr. A. LAZARUS, and Dr. F. PINKUS. Edited, with additions, by ALFRED STENGEL, M.D., Professor of Clinical Medicine in the University of Pennsylvania. Philadelphia and London: W. B. Saunders and Co. 1905. Pp. 714. Price 21*s.* net.

THE present volume of the American edition—for although it is called the English edition it is written in the American dialect—of Nothnagel's well-known Encyclopædia suffers perhaps more than most of those already issued from the conditions under which it is produced—the re-editing of a series of important monographs after the lapse of a certain period of time, combined with the attempt to introduce into the text an account of researches carried out in the interval. Our knowledge of the pathology of the various conditions signalised by changes in the composition of the blood is at present in a very rudimentary state, in spite of the immense amount of labour which has been expended in attempts to elucidate the problems involved. The work of Professor Ehrlich and his pupils has done much to lay a foundation upon which to build, but many of the views put forward by these observers have failed to command universal consent and the tendency of recent work has been on the whole rather antagonistic. Hence the attempt of the editor of the present translation to incorporate the results of later researches with the original articles has been unusually difficult and the result is to produce a somewhat confusing impression on the mind of the reader. It is, indeed, easier to indicate what we do not know than what we do know with regard to the physiology and the pathology of the blood. We do not know the life-history of the red or of the white corpuscles with any approach to accuracy. The source of the erythrocytes in the bone marrow is fairly well ascertained but as to their length of life and their seat of destruction we are quite ignorant. Evidence is accumulating to show that the marrow is one of the birthplaces of the leucocytes, but some of these cells almost certainly originate in the lymphatic glands, while the relations of one form of leucocyte to another are still a matter of controversy. The functions of the spleen are equally undetermined, though it has been clearly proved that this organ is not essential for life. In such circumstances it is not surprising that diseases of the blood form an ill-understood group of affections.

The volume before us opens with an account of the normal and pathological histology of the blood, written by Professor Ehrlich and Dr. Lazarus. This is followed by sections upon Secondary Anæmia, the result of hæmorrhage, and upon Pernicious Anæmia, by Dr. Lazarus alone. In the account of the latter much is made of the existence of megalocytes (large red corpuscles) as the distinguishing feature of the disease. The well-known excess of hæmoglobin as compared with the number of corpuscles is explained as due to the size of the latter. As defined in this article pernicious anæmia is clearly not a single "disease," since the form of anæmia due to the bothriocephalus latus is definitely included under the term. It seems fairly clear that this parasite acts by means of a toxin, and as the blood-picture is practically the same in the ordinary form of pernicious anæmia it is natural to conclude that it, too, is toxic in origin. But of the nature of the poison in so-called "idiopathic" cases nothing certain has been discovered. Some of the features of the disease, such as the diminution in the number of the leucocytes and the ulcers which in some instances affect the Peyer's patches of the intestine, seem to point to an action closely resembling that of the typhoid toxin.

The article on Chlorosis is written by Professor von Noorden and is, from a practical point of view, the best in the volume. The treatment of the condition is very fully described. The author's views as to the origin of chlorosis in a defect of an internal secretion which should be furnished by the ovary are well known and form one of the most interesting speculations as to the cause of this affection; it must, however, be recognised that it is only by excluding certain cases occurring in the male sex, which exactly resemble chlorosis in clinical features, that such a theory can be upheld. Professor von Noorden considers that the function of the ovarian secretion is to stimulate the action of the bone marrow in forming red corpuscles and that the therapeutic effect of iron is due to its supplying an alternative stimulus.

If little is known of chlorosis and of pernicious anæmia, still less would seem to have been ascertained with respect to the pathology of leukæmia. In the book before us the usual division into lymphatic leukæmia or lymphocythæmia and myeloid or spleno-medullary leukæmia is maintained. The former is divided into acute and chronic forms, and pseudo-leukæmia, better known in this country as lymph-adenoma or Hodgkin's disease, is included under this heading. It is noteworthy that in acute leukæmia there usually occur a considerable number of large uni-nuclear leucocytes, here classed as large lymphocytes, which are not very sharply distinguished from the hyaline or myeloid leucocytes characteristic of spleno-medullary leukæmia. We must be content at present to admit that the classification of these maladies is as unsatisfactory as their pathology. Together with the curious condition called chloroma they form a group of allied affections, but the relations of the members of the group to one another and to other diseases such as sarcoma are quite undetermined.

On the whole we may say that this work offers much valuable information to all who are specially interested in conditions of the blood. The bibliography appended to the articles is very complete and the editor's additions bring the matter well up to date. It is hardly a book which will appeal to the busy practitioner or to the student, since with the exception already noted treatment is not a strong feature, while the obscurity of the subjects dealt with admits of no clear dogmatic conclusions being reached. There are a good many misprints scattered about in addition to certain unusual forms of words, such as "abolishment," "unexceptionally" (for "invariably"), and phrases such as "a few swallows of wine," or "The author had Rethers publish....," which we must regard as Americanisms. The following sentence seems somewhat involved: "That they [nucleated corpuscles] suddenly appear in large numbers in a similar manner to the 'blood-crises' first described by *the authors*, as Neudorfer mentions, *the former has* never seen in spite of diligent investigation, although *we has* seen this quite frequently in other forms of anæmia." The italics are ours. In general the translation is moderately well done. There are some good illustrations of blood conditions.

Manual of Antenatal Pathology and Hygiene: The Embryo. By J. W. BALLANTYNE, M.D., F.R.C.P. Edin., F.R.S. Edin. Edinburgh: William Green and Sons. 1904. Royal 8vo, pp. 697. Price 21*s.* net.

THE first volume of this manual dealt with the diseases of the fœtus; the second is concerned with the pathology of the embryo and with a short sketch of the morbid processes which may be initiated or determined in germinal life. As Dr. Ballantyne points out, the pathology of the embryo is synonymous with the subject of teratology, or at least with that part of it which deals with single as opposed

to double monsters. One of the main features of the present volume is that in it the author has dealt very fully indeed with the subject from the side of causation, and it represents the first connected attempt to deal with the genetic aspect of abnormal formations. In any consideration of the pathology of the embryo it is necessary first to consider its physiology, as only in this way can a clear conception of the nature of the morbid processes affecting it be obtained. The physiology of the embryo differs very markedly from that of the fœtus, since to obtain a clear idea of it we must think of the organs not as performing any functions but as in process of formation. The only function of the embryo is organogenesis, and there can be no anatomy of the embryo apart from its physiology. As a necessary corollary of this statement the chief effect of pathological processes on the embryo is the malformation of its organs. At the same time it must be remembered that all that is teratological does not of necessity belong to the embryonic period; thus some malformations undoubtedly arise in the fœtal period of life and united twins, for instance, are probably determined in the germinal period of ante-natal life.

If the abnormal development of the embryo or its teratology is to be understood then a start must be made with a study of its normal development or embryology. Inasmuch, however, as human embryology is incomplete, so our knowledge of human teratology must also be incomplete. As a necessary preliminary therefore, Dr. Ballantyne, after pointing out these facts in the first chapter of this work, devotes the next five chapters to a sketch of the most important facts of human embryology. By this term he means the science which treats of the origin and formation of the parts and organs of the embryo; and it includes a study of all the changes through which the embryo passes from the appearance of its first rudiments up to the transformation of the "transition organism" into the recognisably human embryo. In the section on the general principles of embryology Dr. Ballantyne points out very clearly the many difficulties which beset us when we endeavour to form some idea of the nature of the various processes and of the series of changes in the development of the embryo to which the term ontogenesis is usually applied. As he truly remarks, a fact which many writers have forgotten, there is a specificness in the ontogenesis of different types of animals, and that the embryo of the chick differs in very many particulars from that of the mammal cannot be too clearly remembered. Further than this, a great principle to be always borne in mind in our studies of embryological and teratological processes is the so-called principle of biogenesis, or the fact that ontogenesis never follows a simple or direct route but reaches its end by detours, and, lastly, that ontogeny does not give an epitomised recapitulation of evolutionary progress, it is not therefore an epitomised phylogeny. In an attempt to describe the period of antenatal existence, which extends from the appearance of the first rudiments of the embryo up to its transformation into the neofœtus, we are at once met with the difficulty as to when may it be said that the embryonic life of the new organism begins. As a probable conjecture Dr. Ballantyne supposes that three and a half days after coitus impregnation occurs and that one week later embryonic existence commences with the appearance of the first rudiments of the embryo and that it ceases at the end of the sixth week when the embryo assumes a human appearance. In the third to the sixth chapter he considers this period of development. Having completed in this way a short sketch of embryology in order he is then in a position to pass on to a consideration of embryology in disorder or teratology.

In the seventh chapter the general principles of the pathology of the fœtus are dealt with and it is pointed out that their peculiarities may be regarded as determined by the special physiological conditions of the embryonic period of life and by the transmission into embryonic life of morbid states acquired in the germinal period. The three most important factors to be considered are the physiological, the amniotic, and the germinal; for just as morbid causes in fœtal life act chiefly through the placenta so similar causes in embryonic life act chiefly through the amnion. The environment of the embryo is represented by the amnion and while the physiological factor and the amniotic factor serve to explain most of the phenomena of teratology, yet there are some still to be explained and possibly the solution of the problem lies in the germinal factor. In the next three chapters the various theories of the causation of monsters are considered or the subject of teratogenesis. A full description of the many theories of the past are given, including the supernatural and the natural, and then the author passes on to a discussion of the mental causes or the belief in the influence of the maternal or paternal imagination in the production of monstrosities. There is a very good account of this theory as it has prevailed from the very earliest times up to the present day and, as Dr. Ballantyne truly says, it is extraordinary whether its truth be affirmed or denied and wonderful both in its wide extension in space and time, and in its firm hold both on the minds of the profession and the laity. That it has had a baneful effect upon the progress of antenatal pathology there can be no doubt but whether it is true or not is a matter yet unsettled.

Does a definite impression upon a pregnant woman's mind ever or often cause a defect in the fœtus closely resembling the thing producing the impression? Has the state of the mother's mind any effect on the unborn infant's development? The first question Dr. Ballantyne answers in the negative and the second affirmatively. While he is prepared to admit that the mother's nervous system is often in a peculiar state during pregnancy, yet he regards it as impossible that the sight of a mutilated individual can be so transmitted mentally by the mother as to cause a fœtal amputation resulting in a similar deformity in utero. That strongly marked mental states of the mother may affect the development of the fœtus in utero he admits and to this extent he believes in the old doctrine of maternal impressions. It must be remembered that the results of such mental states are not always necessarily teratological but may be seen in the production of sterility, abortion, congenital debility, or retarded growth.

While some of the teratogenic theories of the past are represented by modern developments, so some of the present-day views spring from very ancient notions indeed. The idea that antenatal deformities may be due to causes acting mechanically on the fœtus is to be found in the writings of Hippocrates and it is one of the most important theories of the present time. In considering it we must remember that the pressure theories are of many kinds and that the form of pressure varies equally widely in the writings of different authors. For this reason Dr. Ballantyne considers the subject under the two heads of pressure exerted upon the fœtus from the outside or from the inside of the mother's abdomen. The question of amniotic pressure is placed under the head of disease as a cause of fœtal monstrosities. The view that diseases are the cause of deformities or the nosological theory of teratogenesis may be regarded from two standpoints: first, that it is diseases of the fœtus itself which are the cause of the deformities; and secondly, that it is through disease of the fœtal membranes, and especially the amnion, that these anomalous conditions are set up. The three different ways in which the amnion may produce fœtal deformities—viz., by disease, by pressure, or by arrested development—are all discussed at considerable length, and, as Dr. Ballantyne justly says, our conceptions of the manner in which the amnion acts must be modified

to some extent in view of the recently ascertained facts as to its development. Its presence fully formed in the earliest human ovum yet described indicates that it may be capable of performing functions at a date before the embryo has passed through the formative or embryonic stage and that it may be quite accurate therefore to speak of disease of the amnion as a cause of deformities, as well as its defective development and the pressure thus produced upon the plastic embryo.

The last theory which has to be considered is the embryological one and in association with this there is a most excellent summary of the work done by many observers in the domain of experimental teratology. What part is played by the action of various poisons and toxins in producing defects in the amnion and whether or not some monstrosities such as those of excess and the double monsters are not due to morbid causes acting upon the blastoderm or even upon the ovum or the spermatozoon before or during impregnation remains yet to be determined. In the classification of monsters the author has adopted one founded upon that selected by Taruffi in his well-known "Storia della Teratologia." In this classification all teratological phenomena are divided into two main divisions, the monosomatous terata in which only a single individual is involved and the polysomatous terata in which two individuals (or at least something more than one) are involved. The greater part of the remainder of the volume is devoted to a description of the various types of monsters. These chapters, based as they are upon the author's unrivalled knowledge of the literature and his exceptional experience of actual specimens, are models of completeness and scientific accuracy and teem with numerous facts and speculations. The last three chapters, perhaps the most interesting in the book, are concerned with a sketch of the pathology of the germ. Dr. Ballantyne aptly names this unknown field the hinterland of antenatal pathology. Our knowledge of it is of the scantiest and our means of improving it are of the slightest. For those who wish to obtain some idea of what is known of this subject, including as it does the vexed questions of the origin of double monsters and of morbid heredity, we can recommend a study of these most fascinating chapters.

In finishing our sketch of this important work we cannot help regretting that Dr. Ballantyne has not been able to carry out his original intention of treating the pathology of the germ in the same complete way as he has that of the fœtus and the embryo. The work would have been one of great value and interest and the three volumes would have formed a trio well worthy of the high reputation of their author. This volume forms a fitting sequel to the first and it only remains for us to congratulate Dr. Ballantyne on the production of a work which stands quite unrivalled in this branch of medical science and which is a credit to him and to the school of medicine to which he belongs.

LIBRARY TABLE.

Nursing in Eye, Ear, Nose, and Throat Diseases. By A. EDWARD DAVIS, A.M., M.D., Professor of Diseases of the Eye in the New York Post-Graduate Medical School and Hospital; and BEAMAN DOUGLASS, M.D., Professor of Diseases of the Nose and Throat in the New York Post-Graduate Medical School and Hospital. With 32 illustrations. Philadelphia: F. A. Davis Co. 1905. Pp. 318. Price $1.25 net.—This little book is sensibly written by competent men and is well adapted for those whom it is intended to instruct—nurses, students, and those general practitioners who have not had the time or the opportunity in their student days of attending or holding office in ophthalmic wards or in those devoted to the ear, nose, and throat. The importance of sterilisation of all instruments and dressings is, of course, dwelt upon by both authors. Dr. Davis especially guards his readers against the employment of any of the quack nostrums so frequently recommended by unprofessional people for what is commonly regarded as a "cold in the eyes," a condition that may mean anything, as Dr. Davis says, from a cinder on the cornea to the most virulent cases of diphtheritic conjunctivitis. The method of applying a Buller's shield is well given. Wet poultices of all kinds are condemned, but we do not notice any recommendation of a remedy that is sometimes of great value—dry heat, applied in the form of a bag of chamomile flowers in cases of chronic inflammation of the sclera, cornea, or other tunics of the eye. Dr. Davis employs a 10 per cent. solution of nitrate of silver in the early stages of purulent ophthalmia, and of the more recently introduced preparations of silver he prefers argyrol, which in such cases should be of the strength of 250 grains to the ounce. He rightly cautions the practitioner against using the peroxide of hydrogen in cases of croupous and diphtheritic conjunctivitis. Whether the employment of jequirity bean dust by either nurse or practitioner is ever advisable may be considered more than doubtful. It is a dangerous remedy in unskilful hands. The modes in which various remedies that are in common use should be applied to the eye are, of course, fully given, with brief notices of their effects. Massage of the eye, it is observed, is sometimes practised, the chief affections in which it has been found serviceable being blepharitis, chronic conjunctivitis, ecchymosis of the lids and conjunctiva after blows, twitching of the orbicularis, and phlyctenular ophthalmia. It is stated to be useful in cases of non-inflammatory glaucoma but in view of the difficulties of diagnosis in such cases it seems hardly a fit remedy to be recommended to a nurse. Dr. Douglass's section emphasises the importance of cleanliness and gives the following as the procedure practised by many of the surgeons at the New York Post-Graduate Hospital. "1. The hands and arms are first thoroughly scrubbed with soap and water with a brush. 2. Dipped into alcohol (95 per cent.) for one minute. 3. Dipped into permanganate of potash solution (2 per cent.) for from three to five minutes. 4. Bleached in a saturated solution of oxalic acid until all the stain from the permanganate is gone. 5. Dipped into a solution of bichloride of mercury (1 in 1000) for one minute. The hands are then dried with a sterilised towel." The reader will find well-written sections on nursing in mastoid cases, the modes of arresting nasal hæmorrhage, and the diet after operations on the nose and the throat.

JOURNALS AND MAGAZINES.

The Medical Magazine.—The issue for June contains a good account of papers read at the recent Conference on School Hygiene and is consequently of more than ordinary value to all interested in that subject. The matter is approached from various sides, amongst others by Dr. A. K. Chalmers, dealing largely with the question of school children's diet and clothing, while Dr. Arthur Newsholme's remarks refer principally to the question of infections and their avoidance. The presidential address by Sir Arthur Rücker considers the two opposing views of the pro- and anti-classics educationists and touches on the ever-present examination question. This number of the magazine has, further, an excellent article on the Operations for Cure of Prostatic Enlargement by Mr. John G. Pardoe.

The Practitioner.—A clinico-physiological article upon the Breathlessness of Cardiac Origin from the pen of Sir Lauder Brunton opens a very good June number of this periodical. Dr. R. Saundby writes upon Cirrhosis of the Liver. In considering the flatulence that often accompanies cirrhosis he lays a stress that appears to us out of proportion upon the part played by atmospheric air swallowed during the taking of food. The prize essay of the month, on the Causation of Appendicitis, comes from Dr. F. C. Bottomley and is a

capital little *résumé* of the subject. Mr. J. W. Thomson Walker gives a good account of recent methods of diagnosis in renal surgery.

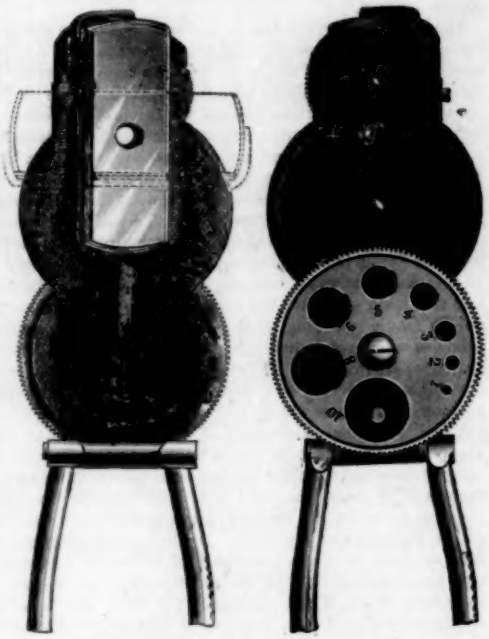
The Royal London Ophthalmic Hospital Reports. Edited by WILLIAM LANG, F.R.C.S. Eng. London: J. and A. Churchill. Vol. XVI., Part I. June, 1905. Price 5s.—The articles contained in this number of the Ophthalmic Hospital Reports are the following: 1. On Renal Retinitis in Young Subjects and on the Relative Frequency of Juvenile Interstitial Nephritis in the Two Sexes, by E. Nettleship. 2. Observations on the Prognostic and Diagnostic Value of Retinitis in Diabetes, by E. Nettleship. Mr. Nettleship finds that the prognostic importance of the retinal changes in chronic renal disease in children is not less grave than in adults. Renal retinitis occurs almost twice as frequently in females as in males. He finds also that the retinal alterations in diabetes are less marked than in renal retinitis. Death results from the diabetes. 3. Primary Chancre of the Conjunctiva and Interstitial Keratitis, by E. Treacher Collins. 4. The Innervation of the Pupil, by J. Herbert Parsons, Curator of the Royal London Hospital Museum. In this article the numerous and various opinions that have been advanced in regard to the action of nerves on the movements of the iris are collected and it closes with an excellent bibliography. 5. Thrombosis of the Central Vein of the Retina, by George Coats. Mr. Coats gives the details of four cases which he has had the opportunity of observing microscopically. The article is an important one and is illustrated by plates showing the appearances seen.

New Inventions.

AN OPHTHALMOSCOPE.

RECENTLY I showed before the Ophthalmological Society a new ophthalmoscope made for me by Messrs. Weiss and Son of London. The instruments at present in use are so good that it would be an impertinence to suggest that they were capable of modification. That which I have designed is something quite different from any existing machine, so it has at least the merit of novelty. Fig. 2 shows the back of the instrument. There is a sight hole with indicators above and below it; that above the sight hole registers tens of dioptres, that below units. When the driving wheel is turned in either direction all the whole numbers of 70 consecutive dioptres pass beneath the sight hole. The range for concave lenses is from 39 dioptres to 1 dioptre, for convex lenses from 30 dioptres to 1 dioptre; there is of course a blank in proper place in the series. Despite this great range of dioptres there are only 15 actual glass lenses in the instrument. There are two discs or wheels carrying lenses which overlap at the sight hole. The larger or units-wheel is geared into the driving wheel and has ten holes; one is blank, and nine are glazed from −1 D. to −9 D. At one point of the rim of this units-wheel there is a finger-like projection. The smaller or tens-wheel has seven holes; one is blank, the others are glazed with +10, +20, +30, −30, −20, −10 dioptres: the blank lies between the two 10 D. lenses, and the two 30 D. lenses are beside each other. This tens-wheel has fixed to one face a spur-wheel of seven teeth; it is quite free from contact with the units-wheel except when the revolution of the units-wheel brings the finger-like projection on its rim upwards in line with the axis of the instrument, then this finger engages a tooth on the tens-wheel and pushes that wheel round one point—a seventh of its circuit. The tens-wheel is governed by a cam so that it only moves one point at a time and always stops accurately centred. The finger on the units-wheel is between 9 D. and O, so when this wheel is revolved as 9 D. disappears from the indicator and before O appears the next tens-lens in the series is automatically brought into position; the movement is repeated as the driving wheel is turned in either direction ad infinitum. It will be noticed that all the unit lenses are concave, whilst the tens lenses are both concave and convex; it follows that the dioptric value at the sight hole at any point is the algebraic sum of the two figures appearing in the indicators above and below the sight hole. The denominating numbers are engraved on

FIG. 1. FIG. 2.



the metal which carries the lenses and cannot be displaced; as is usual in England, convex lenses are marked with red indicators and concave with white. This mechanism I have utilised is known as the "Jumping indicator" and was invented by Harding, an engineer of Leeds, about 30 years ago. It is almost human in its working and has been successfully applied to numerous speed indicators for ships, cycles and carriages, turnstiles, meters and chronographs. There is no doubt about its stability and reliability, whilst the movement is so "sweet" (to use the engineer's term) that it is hardly possible to tell by the touch when the tens-wheel is being moved. For rapidly setting the lenses at any desired point of the 70 D. range there is provision for driving the tens-wheel directly by a touch of the finger. The mirror arrangement is new; it is a combination of the rotatory mirror, the reversible double mirror, and of Loring's tilting mirror. There are plane and concave mirrors placed back to back, so arranged that they are capable of universal movement and tilting, and are equally available for direct or indirect examination of the eye or retinoscopy. By an "embrasure" form of sight hole the tunnel through the mirrors and their septum is reduced to the thickness of a single mirror, to the great advantage of the observer; further, the mirrors are so hung that they are never flatly applied to the instrument; therefore it is almost impossible to break them by any of the ordinary accidents an ophthalmoscope is liable to, short of crushing violence. The driving wheel has been made of a large and convenient size and is fitted with a pupillometer and scotometer for the testing of colour vision. A steel loop-shaped handle is part of the instrument and folds by a spring hinge; when it is folded it surrounds the mirrors and protects them, so that a case is not an absolute necessity. When closed the ophthalmoscope measures only 3¼ inches by 1¼ inches by ⅝ inch; its weight, including case, is under two and a half ounces. It is therefore the smallest complete refraction ophthalmoscope yet devised.

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MOUNT VERNON HOSPITAL FOR CONSUMPTION, NORTHWOOD.

THE country branch of the Mount Vernon Hospital for Consumption has now been in actual working order for some months and about 60 patients are constantly under treatment. We therefore willingly availed ourselves of an opportunity of visiting the sanatorium and of inspecting the various buildings of which it is composed. The sanatorium was designed by Mr. Frederick Wheeler, F.R.I.B.A., and is situated upon an estate of 104 acres near Batchworth Heath, Middlesex, a distance of some 16 miles from London. The site is 375 feet above sea level, the soil being sand and gravel overlying chalk. The hospital is built on a southern slope and provides for the treatment of 114 patients (57 male and 57 female) and consists of eight separate buildings which are connected by means of covered ways. We reproduce a plan (Fig. 1) which shows the relative positions of the component parts of the sanatorium. The provision of such covered ways is highly commendable, for there are numerous objections to having the kitchens, laundry, nurses' apartments, and so on, entirely cut off from the wings in which the wards for the patients are contained.

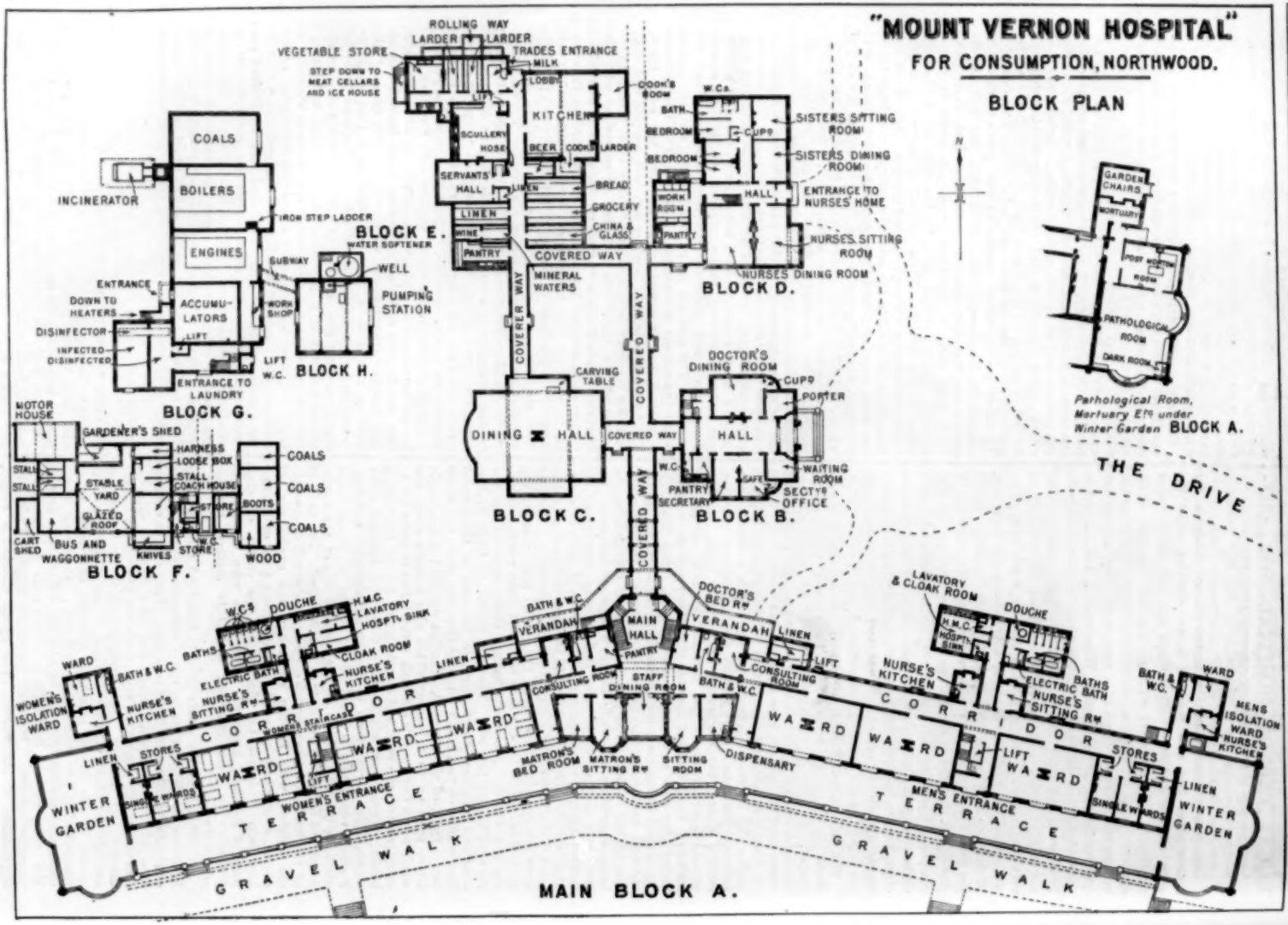
The largest and most important of the buildings is Block A (Fig. 1) which may be termed the hospital proper. It consists of a central block of three storeys, having a central tower, with the wards arranged in extended wings on either side. This building has a south aspect and its length is 500 feet, the wings being placed at a slight angle. In the central portion of this block is situated the principal staircase. The ground floor comprises two consulting rooms, the dispensary staff dining room, and the private apartments of the resident medical officer and matron. Upon the first floor are the library and two reading rooms (for men and women respectively). The library is rightly not accessible to the patients but the books are passed through hatchways into the reading rooms. On the upper floor of this central block accommodation is provided for the hospital servants who each occupy a separate bedroom. On the north side of each wing and running throughout its entire length is a well-lighted and ventilated main corridor, nine feet wide, paved with marble terrazzo and having a green brick dado, presenting a very pleasing appearance. Opening from this corridor there are on the ground floor in each wing three large wards for ten beds each and three wards containing single beds. The wards have a cubic space of not less than 1400 feet per bed. They are lighted by large French casement windows which open, in the case of the ground floor wards, on to a broad terrace extending along the whole south front of the hospital. Similar windows in the wards above open on to a balcony which also extends along the whole south front and is set back several feet in order not to interfere with the light and circulation of air on the terrace below. These ward windows are fitted with latticed roller blinds which form a good protection against wind and rain. Further ventilation is provided by means of hopper-hung windows placed high up on the corridor side of the wards. Abundant access of fresh air is thus afforded. The walls of all the wards are treated with distemper above dadoes which are finished with Ripolin paint and the angles are, of course, everywhere rounded. An excellent plan of heating has been designed by placing in the centre of each ward a specially arranged Teale stove with double fireplaces. We were informed that this method answers admirably.

In addition to the wards already described there are four isolation wards situated in spurs connected with the main corridors by cross-ventilated passages. They can be entirely shut off from the main wings and have separate external entrances. In connexion with each are provided a nurse's kitchen and lavatory. This arrangement is most complete and will be found valuable in cases of unexpected developments in the way of infectious diseases or complications necessitating the isolation of patients. In having wards containing several beds this sanatorium differs from most of the more modern buildings in which each patient has a separate bedroom. We were favourably impressed with the appearance of the wards. The space allotted is ample, and if a patient is confined to bed the sense of companionship, owing to other patients being in the same room, has certainly something to commend the large-ward system. From a purely theoretical point of view separate bedrooms are to be preferred, and it will be interesting in future years to ascertain whether the use of separate rooms as opposed to wards yields the more favourable statistics.

Connected with the main corridor by means of cross-ventilated passages are the sanitary spurs which are centrally placed on each floor and in each wing and are suitably fitted up with all modern appliances. A nurse's sitting room and kitchen are also provided near the same spurs. In addition to the staircases for patients lifts are provided in each wing. Large winter gardens are placed at the extreme end of each wing and can be entered both from the terrace and from the main corridor. Patients are thus able to obtain exercise in bad weather by walking along the terrace, sheltered by the balcony above, through the winter gardens, along the corridor and back to the terrace again. As there are no wind screens in the grounds this promenade is found very convenient when the patients are unable to use the grounds. On the first floor there is in each wing a recreation room. A piano is placed in each, also a billiard table for the men and a bagatelle table for the women. These recreation rooms are divided from the reading rooms by glazed screens. Advantage has been taken of a fall in the land to construct a subway under the main corridor; the lifts in connexion with the patients' staircases descend to the level of this subway, at the end of which, under the winter garden on the men's side, are placed the pathological and post-mortem rooms. The pathological laboratory is admirably fitted up and provided with appliances for research work. Block B, in which is situated the principal entrance, is the administration building and residence of the honorary physician-in-charge. The administrative department is placed on the ground floor and comprises a large entrance hall, board room, secretary's office, and other necessary rooms. Block C is the patients' dining hall and provides accommodation for about 250 persons. The patients sit at small tables, an arrangement which has several advantages. The hall is well lighted and ventilated but is placed rather too near the main block. The Langfield system of heating has been adopted and there is also a specially designed double Teale stove placed in the centre of the hall. The building is connected with the kitchen (Block E) by a special service corridor in addition to the main covered way. Block E, the kitchen building, is, in view of the anticipated future extension of the hospital, larger than is necessary for the present purposes. The cooking arrangements are well devised and the larder and store accommodation are ample. The milk room contains a 35 gallon steriliser. The nurses' home (Block D) is also arranged in accordance with modern ideas. Each nurse has her own separate bedroom and the night nurses' rooms are shut off from the rest of the rooms, so as to insure quiet during the day. Block F is the stable building where in addition to the usual requirements there is a motor garage for three cars. Block G is a building of considerable size, the laundry and electrical plant being housed therein. The laundry occupies the whole of the first floor of the building and is on a more extensive scale than would be necessary for an institution of this size, for here is carried on the washing not only of the sanatorium but also for the parent hospital at Hampstead. All the linen articles and the like are, of course, disinfected before being washed. It is not necessary for us to give a detailed description of the machinery and methods employed. Suffice it to say that all the arrangements are everything that can be desired and could scarcely be improved either in completeness or efficiency. The hospital is lighted throughout by electricity, the current being supplied from an extensive plant in duplicate, which is housed in the lower portion of Block G. There are three engines which are coupled to three shunt wound dynamos of the multipolar type. The battery is of the "Hart" type, of 116 cells, and having a capacity of 540 ampère hours when discharged at 60 ampères. Connected with Block G is an incinerator wherein are cremated all the house refuse and sputum of the hospital.

The water-supply is obtained from an artesian-well which has been specially sunk. The pumping plant, which is placed in Block H, is designed to lift 2500 gallons of water per hour from the bore-hole, about 4500 feet deep, into a receiving tank immediately under the floor of the pump-house and thence to the reservoir tanks in the main building, the

FIG. 1.

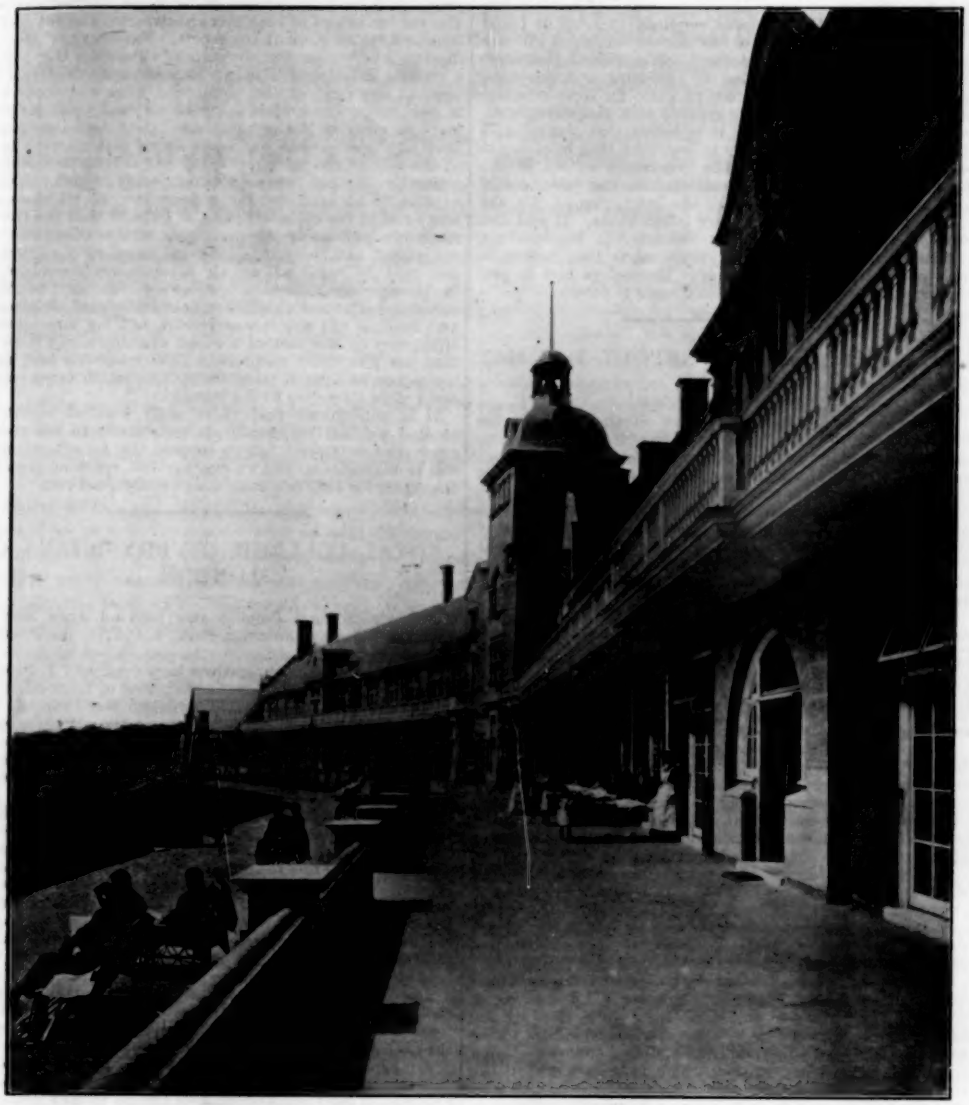

"MOUNT VERNON HOSPITAL"
FOR CONSUMPTION, NORTHWOOD.
BLOCK PLAN
N
THE DRIVE
MAIN BLOCK A.
BLOCK B.
BLOCK C.
BLOCK D.
BLOCK E.
BLOCK F.
BLOCK G.
BLOCK H.
BLOCK A.
Pathological Room, Mortuary Etc under Winter Garden
KITCHEN
DINING HALL
COVERED WAY
MAIN HALL
VERANDAH
CORRIDOR
WARD
TERRACE
GRAVEL WALK
WINTER GARDEN
COALS
BOILERS
ENGINES
ACCUMULATORS
INCINERATOR
PUMPING STATION
WELL
WATER SOFTENER
GARDEN CHAIRS
MORTUARY
PATHOLOGICAL ROOM
DARK ROOM
DOCTOR'S DINING ROOM
DOCTOR'S BED Rm
NURSES DINING ROOM
NURSES SITTING ROOM
SISTERS DINING ROOM
SISTERS SITTING ROOM
ENTRANCE TO NURSES' HOME
CONSULTING ROOM
STAFF DINING ROOM
DISPENSARY
MATRON'S BED ROOM
MATRON'S SITTING Rm
SITTING ROOM
NURSE'S KITCHEN
NURSE'S SITTING Rm
WOMEN'S ISOLATION WARD
MENS ISOLATION WARD
WOMEN'S ENTRANCE
MENS ENTRANCE
LAVATORY & CLOAK ROOM
BATHS
ELECTRIC BATH
BATH & W.C.
LINEN
STORES
LIFT
PORTER
WAITING ROOM
SECTY'S OFFICE
PANTRY
SECRETARY
CARVING TABLE
MINERAL WATERS
GROCERY
BREAD
CHINA & GLASS
COOK'S ROOM
LOBBY
SCULLERY
BEER
COOK
LARDER
ROLLING WAY
VEGETABLE STORE
TRADES ENTRANCE
MILK
STEP DOWN TO MEAT CELLARS AND ICE HOUSE
SERVANTS HALL
LINEN
WINE
PANTRY
IRON STEP LADDER
SUBWAY
WORK SHOP
ENTRANCE
DOWN TO HEATERS
DISINFECTOR
INFECTED
DISINFECTED
ENTRANCE TO LAUNDRY
LIFT
W.C.
MOTOR HOUSE
GARDENER'S SHED
HARNESS
LOOSE BOX
STALL
COACH HOUSE
STABLE YARD
GLAZED ROOF
STORE
BOOTS
CART SHED
BUS AND WAGGONNETTE
KNIVES
WOOD
BEDROOM
CUPB
HALL
WORK ROOM
PANTRY
W.Cs
BATH
SAFE

laundry, and other tanks. The provision for assuring a constant supply of hard and soft water is very elaborate and no fear need be experienced of a failure in this department. In case of a breakdown or temporary failure of electrical power arrangements have been made to work the pumps by steam power, in which case they would be connected by means of auxiliary shafting to the steam engines in Block G. The water softening plant is of the "Stanhope" type and is capable of treating 10,000 gallons per day. The only reagent used is lime and the plant includes its own motive gear, the mixing being effected continuously by power taken from a water wheel driven by the water entering the apparatus.

A complete system for the protection of the buildings from fire has been installed and by means of call bells and telephones communication can be effected between the medical staff, matron, wards, and various administrative departments.

The style adopted in designing the sanatorium (Fig. 2) is a free treatment of Georgian, simple in character and well suited to the purposes of the building. By a happy selection of materials a good colour scheme has been obtained. As regards the general decorative effect the walls are faced with Luton grey bricks, with a proportion of red bricks indiscriminately introduced. The covered ways, too, are artistically built. When patients have to reside for some months in an institution of this kind their surroundings must naturally have an effect upon them. If an austere style is adopted a feeling of depression is likely to be produced but in designing this sanatorium Mr. Wheeler has adopted a style of decoration which can only have a beneficial influence on the inmates. Architecturally the winter gardens add much to the interest of the south front, while affording considerable shelter to the terrace. The terrace is paved with red tiles and bounded on the south side by a dwarf wall and piers having simple moulded stone caps. Flights of steps opposite the entrances lead down to the level of the grounds. The chapel is situated within easy distance from the main

FIG. 2.



The southern aspect of the Northwood Sanatorium.

building. It is simple in its architectural treatment, Gothic in its lines, and is satisfactorily ventilated. The drainage of the whole building has been carried out according to the most approved principles of sanitation and is connected with the main system of the district.

One of the essential points in sanatorium treatment is that due opportunities for systematic exercise should be afforded to the patients. The grounds of the Northwood institution have been well laid out for the purpose. The walks for the male and female patients have been kept entirely distinct. This is not always easy to do, but experience has shown that it is by no means an unimportant detail. Another important matter is that suitable employment must be found for the patients, otherwise a few months' enforced idleness has a demoralising effect on them. We noticed that some of the patients were occupied in gardening and doubtless this is one of the best forms of work for a tuberculous individual to undertake. The grounds of a sanatorium constantly require attention and it is better that these duties should be done by the patients rather than that help should be procured from outside. The committee of the Mount Vernon Hospital may be congratulated on the possession of a sanatorium which fulfils all the requirements for the effectual treatment of pulmonary tuberculosis. It will also serve a second important duty—namely, to instruct the patients how to conduct their lives when they return to their occupations, both as regards themselves and in preventing the communication of the disease to others.

THE ARMY MEDICAL REPORT FOR 1903.

CONCLUDING NOTICE.[1]

AT the close of our first notice there remained a few points which had still to be touched upon. We have already called attention to the prevalence of enteric fever among British troops serving in India in connexion with the increased amount of susceptible material arriving in the command in the large drafts and reliefs coming from home and South Africa. Before dismissing this subject altogether it may perhaps be well to add that the special predisposition of the young soldier to contract enteric fever during his first year of service in India has been noted in every report of the Army Medical Department since 1872.

The increase in the number of men of the most susceptible age will account for an increase in the actual number of admissions and the more the cases the greater the probability of further infection; this was brought to notice in the report for the year 1902 and is still further borne out by the reports for 1903. In 1901 there was a great diminution in the number of men of the susceptible age and a retention in this country of mature and seasoned soldiers and time-expired men; this was during war pressure and consequently the prevalence of enteric fever was much reduced.

We notice that there were only 12 admissions with two deaths from plague in 1903, against four admissions and one death in the previous year. Considering the terrible prevalence of that disease among the native Indian population this says much for the prompt judgment and care with which prophylactic measures were adopted and enforced in the case of the troops.

Malarial fevers formed, as usual in India, a main source of sickness and inefficiency in 1903. It is noteworthy that of recent years there has been no recurrence of any great cholera epidemic, about which we used to hear so much from time to time in the past, but the disease was nevertheless somewhat more prevalent and fatal in 1903 than in 1902.

Returning, however, to that section of the report which deals with the United Kingdom the reader will find at pages 30 and 31 some remarks, together with a table, showing the health statistics according to arms of the service; that is to say, the table gives the admissions, deaths, number of men invalided, and number constantly sick from each arm of the service, with the ratios per 1000 of strength. It will be seen that the Foot Guards do not occupy a favourable position in 1903 in respect of admission, invaliding, and constant inefficiency rates as compared with other arms of the service for they head the list. As regards the rate of mortality the Foot Guards, while showing the lowest death-rate in 1903, took the second highest place in this respect in the previous year—the regimental depôts being in the unenviable position of first. In the Household Cavalry, on the other hand, the different rates are relatively low and contrast very favourably with those of the Foot Guards.

[1] The first notice was published in THE LANCET of June 24th, 1905, p. 1740.

Turning to the subject of recruiting for the army, the report for 1903 is an elaborate compilation containing as usual a number of statistical tables and details. The number of recruits inspected during the year was 69,553. Of these 22,382, or 321·80 per 1000, were rejected as unfit and 47,171, or 678·20 per 1000, passed fit for the service. 1022 of the latter were, however, subsequently discharged as unfit for service within three months of enlistment, thus making the total number of rejections equal to 23,404, or a ratio of 336·49 per 1000.

A comparison with the corresponding ratios of the previous year (1902) shows an increase of 14·61 per 1000 in rejections. The various causes of rejection are classified and set forth in tabular form at p. 43 of the report. Taken as a whole, they disclose a very unsatisfactory state of affairs, for they point to a growing deterioration in the general physique of that portion, at any rate, of the population from which our army is recruited. The subject is one of serious import and never more so than at the present time. Nor does it seem to us that any Government has made an earnest attempt to get at the root of the matter. What has still to be recognised generally is that we require an army which shall be expansible at need by the coöperation of all classes at home and in the colonies. Can it be said that the Government has any really adequate grip of the situation? The antiquated and lingering dread of so-called "militarism" can only be regarded as an anachronism nowadays and in present circumstances. Allowing for any additional causes for rejection which have been introduced of late years and such as did not formerly exist, and for any increased stringency on the part of medical examiners, can it be said that the War Office authorities have made the best use of the means at their disposal for making an entrance into the army more attractive to the recruit?

It is unfortunate that these army medical reports are belated publications, for it naturally tends to rob them of much present interest, but we suppose that for official reasons this is unavoidable. But we may say that, speaking generally, the report for 1903 is a more than usually good one.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN extraordinary Comitia was held on June 23rd, Sir RICHARD DOUGLAS POWELL, Bart., K.C.V.O., the President, being in the chair.

The following communications were received: 1. From the secretary of the Royal College of Surgeons of England, reporting certain proceedings of its Council on May 11th. 2. From the General Medical Council drawing the attention of the College to a list of rejections at recent competitions for commissions in the Navy, the Army, and the Indian Medical Services, indicating the licensing bodies from which the rejected candidates obtained their qualifications. 3. From the secretary of the Royal College of Physicians of Edinburgh denying that the College encourages the use of the title of "doctor" by its licentiates, not being graduates in medicine. 4. From the principal librarian of the National Library of Turin returning thanks for the books presented to the library by the College in January last. 5. From the Board of Education, forwarding papers, received through the Foreign Office, from the committee for organising a first International Congress on Radiology and Ionisation to be held at Liége on Sept. 12th to 14th next.

The TREASURER (Sir DYCE DUCKWORTH) exhibited to the College certain relics of Dr. Edward Jenner which had been presented to the College by Sir Samuel Wilks. The thanks of the College were ordered to be communicated to the donor.

A report was received from the College representative (Dr. Norman Moore) on the General Medical Council on the proceedings of the Council during its session in May last.

A report, dated June 5th, from the committee of management was received and adopted on the recognition of the Medical School at Cairo as a place of study for candidates for the diplomas of the two Royal Colleges.

A second report from the committee of management was received and adopted recommending some additions to the regulations for the public health diploma.

The REGISTRAR (Dr. E. LIVEING) moved that the following by-law be enacted for the first time, viz.:—

That Leonard Rogers, M.D. Lond., elected to the Fellowship on April 27th, being resident in Calcutta, be admitted *in absentiâ*, any by-law to the contrary notwithstanding.

THE LANCET.

LONDON: SATURDAY, JULY 1, 1905.

Lunacy Acts Amendment Bill (London) (No. 2).

UNDER this heading a Bill has been ordered by the House of Commons to be printed (April 18th, 1905) the purport of which is "to authorise the London County Council to provide receiving houses for the reception of persons mentally affected or alleged to be of unsound mind, and to authorise the detention of such persons in such houses, and for other purposes connected therewith." The Bill was presented by Sir JOHN BATTY TUKE and supported by Mr. BURNS and Mr. BENN. There has for some time been considerable agitation, in deference to the recognised objection of the relatives of persons suffering from recent mental impairment to place them under certificates or in an asylum, in favour of a change in the law. It has been desired to secure the detention under more liberal conditions as regards certification and restraint of such persons as are mentally afflicted but who may be reasonably expected to be suffering from disease of only a temporary character. The London County Council, noting the number of acute cases sent into its asylums and that many of these patients have to be discharged after a very short residence, and recognising that it is unfair and improper to brand such persons as "lunatics," has come to the conclusion that it should be empowered to erect reception houses to serve as filters through which mentally affected patients should pass, so that they may have the opportunity of demonstrating whether they are merely suffering from a temporary derangement, requiring only care and a short period before recovery, or whether the illness is more serious, demanding the usual process of certification and incarceration in one of the asylums. Hence the Bill now under consideration, which has been presented to the legislature by an eminent alienist and is backed by two prominent members of the Council. The experiment is an expensive one, entailing the erection of costly buildings and ambulance stations, accommodation for the treatment of out-patients, and provision for a large staff of officers. We conceive it to be our duty, in the interests of the public and of the patients, to criticise the proposed arrangements and to point out that material modifications are necessary to the success of the scheme, if, indeed, it is expedient to carry it out.

It will be granted that if a modification of the present lunacy law is necessary in the case of well-to-do patients it is right that a similar proposal should be made for pauper patients affected in a like manner, having regard, that is, to the view that if the present conditions are adverse to the recovery of the well-to-do patient they also act equally adversely to the pauper patient. We may point out that another Bill to amend the Lunacy Acts, dated April 18th, 1905, has been presented by the Attorney-General and supported by the Solicitor-General, the main feature of which is the "temporary care of incipient lunatics." This Bill provides that in certain circumstances a person suffering from probably curable mental disease may be placed for a period of six months under the care of a "person whose name and address are stated" upon the certificate of a medical practitioner. This Bill is almost certain to become law. What a difference in the two processes which have the same end in view! In the case of the private patient there is no mention of special provision of an institutional character or of the justice of the peace—nothing beyond the mere certificate of any medical man that in his opinion So-and-so is suffering from mental disease of a not confirmed character. These simple conditions are not possible in dealing with the poorer classes who cannot be placed in the costly homes accessible to the well-to-do. If they are to reap the advantages of the proposed modification of the law they must be provided with special places for treatment, not asylums but hospitals, inasmuch as the very essence of the new scheme is to do away with the opprobrious term "asylum" and all associations with the word. And here comes in the weakness of the new scheme as at present drafted in the Bill—to all intents and purposes the new "receiving house" is an asylum and unless it be conducted on very broad lines it will be esteemed as such. The term "reception house" is unfortunate; it savours too much of other "houses," the workhouse and the house of detention, and since, according to the drafted Bill, the institution is to be for "persons alleged to be lunatics" and is to be "conducted as nearly as possible in accordance with the law regulating county asylums," we have little difficulty in surmising that it will be held in public estimation to be something between an asylum and a prison. What is the difference? There are to be a "detention certificate," the interference of a "justice," the power of restriction of liberty and control by an organised staff, the "supervision of the Commissioners in Lunacy" and the mixture of all classes of "alleged lunacy" with "mental disease in its earlier stage or of the symptoms of incipient mental disease." All this sounds to us very like the present "asylum," even though Clause 18 of the Bill (p. 7)—a Bill, be it remembered, drawn up "to establish houses for persons alleged to be lunatics"—offers a salve to the conscience by stating that "a patient detained in a receiving house shall *not*, unless certified as such, be deemed a lunatic." Practically the very individuals whom it is desired to treat as merely sick persons will be housed with legally "certified lunatics" and will be under the bond of a detention order and the surveillance of the Commissioners in Lunacy. Is this realisation of an abstract idea worth the enormous expenditure entailed by the erection of new detention houses and ambulance stations in various areas or districts in the county? Will it be of any real advantage to the patient to tell him that he is not what he is practically made into? Regulations may abolish locks on doors, may dress attendants in ordinary clothes instead of uniform, may carefully allude to the patients as not insane or not "lunatic," but so long as

the inmate of an institution is placed in the only two classes of detained persons in this country, lunatics and prisoners, he will be regarded as belonging to one class or the other. The contemplated provision for the treatment of out-patients is not bad in theory but inasmuch as persons can now get what they want in that way at the general hospitals it is doubtful if they will attend at the proposed "houses"; they will think that they run the risk of detention if their symptoms are unfavourably judged by the medical authorities of the institutions.

The additional cost of these proposed houses to the overburdened ratepayer has to be taken into consideration. After "areas" have been secured in convenient places—and to be of any use they must be in London—the question of the style of buildings and the extent of them will have to be considered, and as the price will figure out at probably £200 a bed it will be seen that the proposition may easily run into hundreds of thousands of pounds, to say nothing of a weekly maintenance rate of something like 12*s.* per head. And what is the good to be achieved by this new expenditure? True, the present asylums will be less pressed, and it may be argued that as new accommodation has constantly to be provided it may as well take the proposed shape as any other. But most of the existing asylums have already accommodation of the very best kind for the treatment of acute cases and it seems ridiculous to devote this to the housing of the merely chronic insane, a result probably within the view of the new Bill, for it looks as if very few cases will be sent directly to the asylums—only when the patients have passed the test of the receiving house will they be apportioned as seems good to the authorities. No sooner will the "houses" be opened than they will be filled and the ratepayers will find themselves the supporters of many forms of nervous disorders which are better treated at the general hospitals. At the present time the workhouse actually does the work contemplated by this new Bill and in many instances does it very well. It would be worth while to obtain information from the central office of the asylums department of the London County Council on the following question—How many applications are received from the workhouses which are afterwards cancelled because the patients for whom application was made have recovered, or have been taken away by their friends? We know that the number is considerable and that beds which have been allotted in the asylums are frequently not wanted. If it is intended to pass all cases of insanity, incipient or pronounced, through the reception houses there will be no need of the present workhouse accommodation for these cases, but the substitution of one kind of officialism for another hardly justifies the abolition of machinery already in working order. The machinery may not be perfect but it is capable of improvement and of being made completely adequate for the purposes of this new Bill. The Local Government Board is surely as good a curator as the London County Council. Why cannot the Board be intrusted to see that the workhouse infirmaries are perfected for these purposes, purposes which they actually now do carry out, without burdening the rates with a new and costly experiment? It should be recognised that though the principle of temporary treatment before committing to an asylum should hold with regard to the poor as well as to the rich, there is no binding necessity that the methods to attain this end should be precisely similar, and therefore that it is no hardship for the poor person to be treated in the workhouse under revised conditions though the richer person may by his wealthier circumstances have the luxury of treatment in the house of a private individual. Let us look facts in the face. The County Council, we know, thinks that it is an objection for poor people to be termed "paupers" and to be treated in a "workhouse," and to obviate these fancied evils it proposes to saddle the ratepayers with elaborate buildings which are for all practical uses houses of restraint in which persons are to be treated at the charge of the rates, and no ostrich-like shutting of the eyes to facts will alter the real truth. If, however, the Bill does become law we hope that advantage will not be taken of its powers to begin buildings on different areas at the same time. Let one be erected in order to gain experience and to test the potentialities of the new ideas.

Small-pox in Leicester during 1904.

ONE of the most interesting and as yet inexplicable phenomena in the history of epidemiology is the varying prevalence, fatality rate, and degree of infectivity of certain communicable diseases. Why is it that for years diseases such as plague, cholera, and influenza may either remain latent or confined to their endemic centres and then, bursting their bonds, spread over the world in a pandemic wave? Why is it, too, that at times small-pox is attended with a truly terrible fatality rate, while at others the disease, though prevalent, can hardly be detected in the bills of mortality? For several years past small-pox has evinced, not only in this country but also in the West Indies and elsewhere, such a remarkable mildness that, as at Cambridge, the true nature of the malady has been matter for speculation, and such mildness has manifested itself not only in well vaccinated but also in badly vaccinated communities. One of the best illustrations of this fact is to be found in the history of small-pox in Leicester during 1904 as set forth by Dr. C. KILLICK MILLARD in his last annual report. There were in Leicester during last year 321 cases of recognised small-pox and the table below gives certain facts both with regard to the vaccinated and unvaccinated:—

	Cases.	Deaths.	Fatality rate.
Vaccinated	127	1	—
Unvaccinated	192	3	—
Uncertain	2	—	—
	321	4	1·24

The death in the vaccinated group was that of a male, aged 46 years, of drunken habits, in whom the evidence of vaccination was open to doubt. But the point which is of greatest interest is the low fatality rate among the unvaccinated. It is clear, indeed, as we have already said, that small-pox may at times be so mild that inasmuch as there are but very few fatal cases the influence of vaccination is hardly detectable in the death returns. It has, however, to be pointed out that even in mild types of the disease, such as are here in question, the protective effects of vaccination are at once apparent if they are sought for

in the proper channel. Although there were in the outbreak under discussion 125 cases under 15 years of age not one of them occurred among the vaccinated class, whereas the three deaths among the unvaccinated occurred in children under ten years of age. To this point Dr. MILLARD bears ample testimony when he says, referring to the figures for both 1903 and 1904, "there was not one single instance of the disease attacking a person who had been recently vaccinated before exposure to infection," but seeing that in 1904 no vaccinated person under 15 years of age was attacked a somewhat elastic use is perhaps made of the word "recent." The records with regard to the hospital staff are equally remarkable and Dr. MILLARD'S observations in this connexion will probably be freely quoted. He tells us that the majority of the staff employed in 1903 were also employed in 1904 and that of the 74 persons so employed every one, with the exception of three who had had small-pox before being engaged, had been recently vaccinated. After recounting the manner in which the staff were brought in contact with the patients and adding that during the two years nearly 700 cases of small-pox passed through the hospital, he is able to report that not a single member of the staff contracted "this most infectious disease." In seeking for an explanation of this immunity he refers to the suggestion which would certainly be made in Leicester that it was secured "by other means which were taken" and not by vaccination. To this he replies that "as medical superintendent of the hospital and responsible for its management I ought to know what precautionary measures were taken, and I say emphatically that *beyond vaccination no steps whatever* were taken to protect the staff. I knew that with efficient and recent vaccination no other measures were necessary and that without it none would be of avail."

It must not, however, be concluded that Dr. MILLARD is what may be termed an enthusiast in the matter of vaccination. On the contrary, he thinks that in the recent epidemic the anomalous type of the vaccinated cases rendered them very difficult of detection, and to five "unrecognised" cases of this type he attributes the occurrence of no fewer than 40 other cases in the space of four weeks, and although he makes a confession of faith in writing "I believe absolutely in the protective power of vaccination" he thinks it possible (*a*) that the importance of universal vaccination, as also the terrors of small-pox, have been over-estimated; and (*b*) that the objections to vaccination and the efficacy of modern preventive measures have been under-estimated. We presume that this under-estimation argument is not intended to apply to Leicester where we are sure even Dr. MILLARD would admit that the virtues of the "Leicester method" and the terrors of vaccination have been proclaimed *ad nauseam*. It is, however, only fair to Dr. MILLARD to point out that with regard to the "Leicester method" he writes: "I will say at once that I consider it is too soon yet to arrive at a final conclusion as to its value" and he expresses the view that "Leicester's danger lies in the fact that the popular feeling against vaccination is so strong that if a breakdown of the present system did occur it is unlikely that the people would submit to universal vaccination until a very serious catastrophe had occurred." Leicester has, he thinks, succeeded in the past not *because* she has abandoned infantile vaccination but in *spite* of having done so and he regards it as "pitiable" that other communities should copy Leicester in the matter of abstention from vaccination but should fail to copy the other portions of her "method." Dr. MILLARD'S report will, we imagine, be read with very mixed feelings by the members of the Leicester borough council since he frankly tells the antivaccinationists that in trying to disprove the protective value of vaccination they are leading an utterly forlorn hope and he appears to us to suggest that they would do better to throw overboard this plank in their platform and, closing their ranks, to march forward under the "no compulsion" banner. We wish that he could use his influence with the people to adopt the method "made in Germany" rather than that of their own manufacture, and the fact that in Leicester during 1904 40 cases of small-pox are attributed to five "unrecognised" cases should in our view have led Dr. MILLARD to emphasise the need for systematic general revaccination. It is only by this means that the effect of anomalous cases can be guarded against, that business disturbances can be prevented and that the costly expenditure in small-pox hospitals can be obviated.

The Peterhead Hospital.

PROVOST LEASK of Peterhead is a gentleman who has the courage of his opinions. We publish elsewhere the observations which he is reported to have made on the occasion of laying the foundation stone of a hospital for infectious diseases in the burgh over which he presides, observations which appear to show a quite curious want of power to appreciate the real circumstances and necessities of the case. If local authorities in other Scottish ports resemble Provost LEASK, his denunciation of the Scottish Local Government Board may well excite lively feelings of gratitude for its existence and for its activity. His case is that whereas "a small cottage hospital with two or three beds has amply served the necessities of the burgh for the last 20 years or more and has been the only hospital in the place," the local authorities have been compelled by "a body of gentlemen in Edinburgh who had been formed by a grandmotherly government into a sort of moral policemen" to establish an isolation hospital which is to be of the villa type, built in four blocks and containing 16 beds. The worthy provost went on to inform his hearers that the aforesaid "moral policemen" required no knowledge of local needs or local circumstances and that the less they knew of them the better they would be prepared to carry out "cast metal rules and regulations" which they were "privileged to apply and enforce with something resembling the despotism of a Russian Tsar."

The circumstance that Peterhead never had any hospital at all until 20 years ago, and that since then its "small cottage hospital with two or three beds" has "amply served" the requirements of the locality is a statement which may go far to justify Provost LEASK'S praises of the salubrity of the town over which he presides, although it also suggests more than a possibility that the requirements in question may at least be partly supplied by the hospitals of Aberdeen. But the real crux of the question is in the fact

that Peterhead is a port, with an extensive export and import trade, and that isolation hospitals at ports form essential portions of the defences of the country against foreign epidemics. According to the latest statistics which we have at hand the population of the burgh is about 12,000, and the shipping entering the harbour amounts annually to some 60,000 or 70,000 tons. This tonnage is more likely to increase than to diminish, because, although the port is no longer a centre of the seal and whale fishery, a new harbour of refuge has been constructed by convict labour, and any increased facilities for commerce are certain to be developed to the utmost by the energetic population of the place. As human nature is constituted it is not impossible that local laxity in the enforcement of port sanitary regulations, especially if rendered inevitable by the absence of the means necessary for carrying them into effect, might be a condition not wholly unattractive to skippers whose crews had been stricken by disease, and might tend to convert Peterhead into a sort of heel of ACHILLES in the general invulnerability of Scotland. The isolation hospital of a busy shipping port is not so much required for the dropping cases of infectious disease which may arise among the residents as for the protection of these residents and of the country generally against the diseases which may be imported from abroad. Energetic action was taken by the Local Government Board for England twelve years ago, in order to obtain the establishment of proper isolation hospitals at all the ports under its jurisdiction which were not already provided with them; and, if Peterhead has been allowed to be content with the possession of "two or three beds" until now, it would seem to us that the action of the Scottish Board should be condemned for its tardiness rather than for its despotism.

History is only too full of evidence, moreover, that the sort of official optimism which seems to prevail at Peterhead is not always a trustworthy indication of the nature of the facts on which it rests. Where there is but an inadequate provision for dealing with certain classes of evils there is likely to arise a general impression that they must remain undealt with, and an acquiescence in the consequences of neglect as if these ought to be regarded as unavoidable. Where little or nothing is done for the mitigation of disease its presence comes to be regarded as part of the order of nature; and where persons in authority have neither the means nor the inclination to act effectively, effective action soon ceases to be either expected of, or demanded from, them. To say that a cottage hospital with two or three beds has been amply sufficient for the needs of an industrial population of 12,000, busily engaged as fishermen, sailors, quarrymen, stone-cutters, ship-builders, and so forth, and liable not only to all the ordinary forms of disease but also to their due proportion of accidents, seems to us to be an incredible proposition, the maintenance of which can only be explained on the ground of ignorance of the amount and kind of provision which like conditions are found to justify and to demand elsewhere. We fully agree with the proposition that the requirements of a central authority should be governed by sufficient local knowledge, but we cannot admit that they should be governed by possibly uninstructed local opinion. Provost LEASK condemns the Local Government Board for "seeming to believe that local men knew nothing about the requirements of their localities or could not be trusted to do their proper duties." It must be conceded, on the one hand, that such a belief may be carried too far but it may safely be maintained, on the other, that it often rests upon a very considerable body of evidence. The recent epidemic of typhoid fever at Lincoln has admirably illustrated the capacity for inaction which may be exhibited by local men in the face of conditions absolutely certain to produce disaster, and the case of Lincoln has been exceptional only as regards the magnitude of the outbreak which has been permitted. Every recurring annual report of the medical officer of the Local Government Board contains accounts of epidemics produced by causes to the existence and character of which the attention of the local authorities had been repeatedly directed, but which had none the less been suffered to remain unchanged; and it is well known to all sanitary administrators that the owner of a dangerous nuisance is almost invariably solicitous to obtain a seat on the board by which this nuisance ought to be suppressed. On such a board, as a rule, his sole function will be the protection of his property against the demands of the inspector or of the medical officer of health. Provost LEASK is, no doubt, plausible but in the face of facts which are well known to all of us, and some of which, indeed, are disclosed by his very arguments, we are unable to say that he is convincing. His criticism will be useful in so far as it may render Local Government Boards careful in their inquiries but it can hardly be said to convict the Board for Scotland of hasty or inconsiderate action. Before many years have passed away the inhabitants of Peterhead will probably have ample cause to congratulate themselves on the consequences of the official pressure of which their provost now complains and to regard their new hospital with a satisfaction based upon experience of its utility.

Annotations.

"Ne quid nimis."

THE DEFICIENCIES OF BRITISH INNS.

THE holiday season is approaching and we constantly hear recriminations addressed to those who choose to spend their holidays abroad instead of in their own country. It is quite true that these islands have objects of interest quite equal to those possessed by foreign countries, but in our opinion the traveller who makes holiday in Great Britain by means of a driving, cycling, or motoring tour is not catered for in anything like the satisfactory way in which he is in even the smaller towns or villages of provincial France. We have received a letter from a correspondent who has recently returned from a tour in the county of Kent which thoroughly bears out our contention. He says:—

> I have recently been cycling through the country around Tunbridge Wells and send you some experiences which may be of interest to your readers and, I hope, of instruction to the innkeepers, if perchance these lines should meet their eyes. I stopped at one place which is famous for one of the historic English houses and which also boasts an "institute" erected by some philanthropist for the providing of light refreshments. Here, being a hot day, I asked for a lemon squash. "We've no lemons," was the answer. I inquired if no lemons could be got in the village, there being a grocer's shop some 20 yards away. "No," said the man in charge, "there's no such thing to be got in ——." So I had to go myself, buy two lemons, and come back, when

I was grudgingly provided with some flat soda-water out of a syphon and some sugar. I rode on some miles further and stopped at ——, where there is to outward seeming a charming inn. There are flowers in the windows, trees with benches outside; inside, a grand piano, two ancient amphoræ in the hall, a photograph of the Duomo at Florence, a plan of the drains, a smiling manageress in black silk, and a courteous manager in light grey dittoes and a red tie. I thought this looked promising and asked if I could have some lunch. "No," said the lady in black, "we've nothing in the house. If you like to wait half an hour we can give you a chop or a steak." "Nothing cold," I said. "No, there's no demand for it." Eventually the gentleman in grey said he thought that there was cold tinned tongue. There was, and I had it. There were no lemons, of course, but I had brought one with me. A few days later I rode to another place distinguished for having a church with some excellent modern windows by a distinguished artist, some interesting old houses, and an inn the building of which dates back to about 1450 in places. Here an almost exactly similar scene was repeated. Again I was offered a chop or a steak; again I had to put up with a tinned tongue (American); again, warned by experience, I had provided my own lemon. A friend to whom I recounted my experiences told me that just the same happened to him at the principal inn of the place where I had my encounter with the institute keeper. He had taken two friends from America to see the historic house and offered them lunch at the inn. The only thing in the house was a very poor quality indifferently cured ham from Chicago. He was also charged 6*d.* for putting his bicycle in a shed. Is it any wonder, Sirs, that persons who can have but a short holiday prefer to go to Normandy or Brittany where one is always sure, even in a little village, of civility, a good omelette, fresh vegetables, and generally a little soup?

We agree with our correspondent. The British innkeeper in the Home Counties, at any rate, does not seem to care in the very least about the comfort of his guests. His only object is to sell intoxicating drinks. In many instances this is not altogether his fault for he is the victim of the tied-house system. But the difference between the British inn and the foreign one is very striking and we are sure that if some innkeeper in any one of the interesting old towns to be met with within 40 miles of London would lay himself out to provide travellers with a simple, cleanly meal of cold beef, fresh salad, lemons, strawberries, and other fruit when in season, and would not charge 6*d.* for standing a bicycle up against a wall, he would reap his reward.

THE METROPOLITAN WATER-SUPPLY.

A LETTER appeared in the *Times* of June 23rd from Mr. R. Brudenell Carter, F.R.C.S., in which he described a sudden cessation of the domestic water-supply of dwelling houses in Clapham, Balham, and Tooting, although the service for watering the roads underwent no interruption and although no warning of any probable scarcity had been given to the consumers. The only explanation obtainable by Mr. Carter from "irresponsible clerks" at the district office of the Water Board was that a shortage of supply had been occasioned by the difficulty of filtering water which had been rendered unusually turbid by the recent heavy rains; and that this shortage, although it interfered with the domestic service to cisterns on the upper floors of houses, did not interfere with the service to standpipes at lower levels and thus permitted a sufficient supply to be given to the watering-carts. The excuse was a foolish one, because the height to which the water service will reach is almost entirely governed by the quantities which are withdrawn at lower levels, and hence if the street service had been temporarily arrested that to the houses might unquestionably have been continued. From inquiries which we have made we learn that no water entered the houses for more than 24 hours, and we regret to add that there is no evidence on the part of the Water Board or of its servants of any adequate appreciation of the character of the failure of duty of which they have been guilty or of the consequences possibly attendant upon it. Sir John Simon once called attention to the very imperfect manner in which the public was protected "against certain extreme dangers which the malfeasance of a water company, supplying perhaps half a million customers, may suddenly bring upon great masses of population. Its colossal power of life and death is something for which until recently there has been no precedent in the history of the world; and such a power, in whatever hands it is vested, ought most sedulously to be guarded against abuse." So little has this been done that the safeguards which existed in the time of the companies have practically been entirely withdrawn by the establishment of the Board. We are advised that the previous Acts relating to the companies are not expressly incorporated in the Act constituting the Board. It is only provided that the Board shall be subject to all the duties, obligations, and liabilities of the companies in like manner as if it were the companies, and these words do not expressly provide that the penalties which were recoverable from the companies in police-courts for breach of obligations may also be imposed upon the Board. In these circumstances it is doubtful whether a police magistrate would inflict a penalty and if he did the case would unquestionably be taken to the High Court at the cost of the ratepayers, upon whom, in any case, and not upon the delinquents, the penalties would fall. Mr. Carter saw many persons engaged in fetching temporary water-supplies from a pond on Clapham-common in which tramps are in the habit of washing themselves and their clothing, and he referred to the dangers of typhoid fever which the use of such supplies might entail. Apart from this, it is obvious that the complete absence of water from hundreds or thousands of houses might easily be productive of fatal consequences in many ways, and if the Water Board continued to fail in the discharge of its duty the verdicts of coroners' juries would be likely before long to direct the attention of Parliament to the necessity of increased provision for the public safety. It is obviously the duty of the Board to provide filtering areas sufficient for times of unusual turbidity of the supply, and to meet any unavoidable shortage (of the occurrence of which there is always ample foreknowledge at headquarters) by giving such warnings as may be productive of economy in the use of water, and by sending round water-carts or by establishing temporary stand-pipes in localities where the domestic supply is suspended.

PRECIPITATE LABOUR.

HAPPILY it does not often occur that cases of precipitate labour entail the death of both the mother and child as in the very interesting case recorded by Mr. H. E. Rayner and Dr. W. L. Stuart in THE LANCET of June 17th. Cases of this kind are not infrequent and in quite a number of instances delivery has occurred whilst the mother was in the closet. In a case published by Colton a woman aged 25 years felt a desire to urinate and whilst seated on the closet gave birth to a child. She had felt no pains and twelve days later is said to have ridden twenty miles to the funeral of her baby. Leonhard describes the case of a woman, aged 37 years, who had had six living children and who was pregnant for the tenth time; she had taken an aperient and on attempting to rise after the bowels had been opened found herself attached to the closet by the cord. The child lived but the mother died half an hour after returning to bed. There is a curious story related by Gould in his book on the "Curiosities of Medicine" of a woman who is said to have been delivered of a child in the lavatory of a railway train, the child afterwards being found alive on the track! In another case quoted by the same author a woman, aged 40 years, who had borne two children, was delivered so suddenly whilst in a bath that the child was in danger of drowning. The question as to whether a healthy woman can be delivered unconsciously is one of much medico-legal interest. It is difficult to understand how a woman can mistake the onset of labour for a desire to pass urine or to defæcate. It is interesting to note, however, that patients not uncommonly say that the discomfort experienced by them when the bladder is over-distended is not unlike that

felt at the onset of the monthly periods. It is difficult to understand the possibility of an error in these matters, but as such an excuse is often put forward in cases where women are accused of the wilful concealment of birth it is well if possible to give them the benefit of the doubt although the plea is generally not a true one. At the Barking outfall of the London sewers at one time they received an average of five fœtuses a year and it is unlikely that many of them got into the sewers without the knowledge of the mothers. The occurrence of a case of precipitate labour no doubt depends upon the combination of a number of different factors. Winckel as the result of his investigation of some 250 cases of this kind concludes that the most important and constant of these factors are: excessively powerful pains, multiparity, such general affections of the mother as bronchitis and epilepsy, small size and macerated condition of the fœtus, and abnormal shortness of the cord. The most important of all, however, he considers to be the position of the patient at the time when delivery occurs, and as an explanation of the excessive force of the pains he suggests an abnormal development of the muscle of the upper uterine segment over that of the lower segment. He further points out that heredity plays some part, even according to Cazeaux as far as the third and fourth generation, while the condition may recur in the same patient in successive pregnancies. It is difficult to believe, as do the authors of the case recorded in our columns, that the premature separation of the placenta and intra-uterine hæmorrhage could have been the exciting causes of such extremely powerful uterine contractions. This complication of labour tends in the majority of cases to produce inertia of the uterine muscle rather than excessive action. It is uncommon, too, to find a rupture of the uterus; the more frequent complications are acute prolapse or inversion of the uterus and retention of the placenta.

A PRACTICAL INVESTIGATION OF THE EFFECT OF PRESERVATIVES UPON DIGESTION AND HEALTH.

THE remarkable experiments undertaken at the instance of the United States Department of Agriculture by Dr. H. W. Wiley, chief of the Bureau of Chemistry, with the view of determining the effect of certain preservatives upon digestion and health, have been concluded so far as boric acid and borax are concerned. A very interesting and complete account of the experiments, which were conducted on human subjects, has been issued. The report undoubtedly contains the most valuable contribution that has ever been made on this subject. The work has been conducted with admirable care and with a splendid regard to detail. 12 persons were selected for the purpose who were kept under constant supervision, including medical examination directed to the blood, the temperature and pulse, and the body weight. The preservatives were administered in foods which were analysed as regards their contents of water, fat, nitrogen, phosphoric acid, and heat-producing equivalent. The urine and the fæces were analysed. It may be imagined what a great number of analyses were thus involved and also what special difficulties there were connected with the work. While the results showed no startling record of symptoms there was distinct evidence of impairment of normal health in many cases. When boric acid or its equivalent in borax is taken with the food in small quantities not exceeding seven and a half grains a day no notable effects are immediately produced. Long-continued exhibitions of small doses or large doses extending over a shorter period show in many instances a manifest tendency to diminish the appetite and to produce a feeling of fulness and uneasiness in the stomach which in some cases result in nausea, with a very general tendency to produce a sense of fulness in the head often manifested as a dull and persistent headache. In addition to the uneasiness produced in the region of the stomach there appeared in some instances sharp and well-located pains, which, however, were not persistent. These sensations disappeared as a rule when the preservative was withdrawn. The administration of boric acid in quantities of from 60 to 70 grains per diem continued for some time resulted in most cases in loss of appetite and inability to perform work of any kind. In many cases the person became ill and unfit for duty. It would seem, therefore, that 60 grains per day is the limit of exhibition beyond which the normal man may not go. Most of those under observation were able to take 45 grains a day for a somewhat protracted period and still to perform their duties. They, however, felt injurious effects and it would seem certain that the normal man could not long continue to receive this quantity per diem with impunity and in some instances even seven grains per diem appeared to have a disturbing effect upon the normal health. The conclusion seems to be warranted, therefore, that both boric acid and borax when continually administered in small doses for a long period or when given in large quantities for a short period create disturbances of appetite, of digestion, and of health. These results, it seems to us, must gain acceptance considering the eminently practical way in which they were obtained. We look forward with very great interest to the indications which further experiments may give with other preservatives. In the meantime we congratulate Dr. Wiley on the patient, painstaking, and practical way in which he has approached the question and a word of praise is due to those men who voluntarily submitted themselves to the experiments.

LIQUOZONE IN THE CORONER'S COURT.

ON June 26th Dr. W. Wynn Westcott concluded his inquiry into the deaths of Constance Adelaide Sheppard and Dorothy May Sheppard who were alleged to have died from the effects of a patent medicine called liquozone. The proceedings at the opening of the inquiry were summarised in THE LANCET of June 10th, p. 1594. At the adjourned inquiry Sir Thomas Stevenson gave the results of his analysis of liquozone. The principal ingredients were: sulphur dioxide, 0·269 per cent.; and sulphuric acid, 0·848 per cent. The preparation was practically a solution in water of sulphur dioxide which had partly oxidised into sulphuric acid. Taken internally it would act as an irritant and might cause vomiting in a child. Mr. A. J. Pepper said that in his opinion the symptoms were due to food poisoning, possibly watercress, and Dr. A. P. Luff also said that food poisoning was to blame. He did not think that it was possible for liquozone to have caused the deaths. The jury returned the following verdict:—

> Both the children died from exhaustion, after vomiting and diarrhœa, set up by taking liquozone. They further wish to add their deep sympathy with the parents in the loss of their children. They further consider that some representation should be made to the proper authorities in order that in future some investigation should be made as to the nature of these patent medicines before they are placed on the market.

In the course of the case Mr. Andrews, on behalf of the children's parents, asked Sir Thomas Stevenson: "Should I be exaggerating if I said that the pamphlet was nothing but lies?" To which Sir Thomas Stevenson replied: "Not greatly. It has no foundation in fact." We desire again to insist, as we have done for many years past, that some control should be exercised over patent medicines and the lying statements by which they are puffed in magazines and, we regret to add, even in the better class daily journals. In the advertisement columns of most, if not of all, the popular sixpenny monthly magazines there

will be found every kind of quack medicine and so-called medical appliance set out in the most glowing terms. In the June number of one magazine now before us there are over 40 such advertisements. The proprietors of these magazines pocket from £30 to £50 per page of dirty money for these announcements, so that it is obvious that the owners of the quack preparations must make enormous profits to be able to pay such sums. The Government connives at the sale and at the deception by insisting on the use of a 1½*d.* stamp. Either such quackery should be prohibited or the amount of the stamp should be raised to some prohibitive sum, or still better, any quack trader should be compelled to pay an annual licence to cost, say, £200 per annum. The liquozone quacks apparently keep a qualified medical adviser, Dr. J. R. Wallace It would be in accordance with the traditions of the profession to which he belongs if he severed his connexion with the company.

SMOKE ON THE RIVER THAMES.

WE said last week that the London County Council has done many things, for some of which it has been heartily praised and for others equally heartily condemned. In the former category we placed the recent inauguration of an efficient steamboat service on the Thames, a step which so far has met with considerable success, and we are quite confident that the London County Council would be the last body in the world which would knowingly detract from this success by committing a hygienic blunder. The London County Council is our health authority and amongst its duties in this connexion is the suppression of the smoke nuisance and its energies, backed by the vigilance of the Coal Smoke Abatement Society, have undoubtedly gained for Londoners a purer and a cleaner air. But if the new Thames steamers cannot be improved as regards their fires and stoking arrangements the river bids fair to flow under a dense and offensive pall of smoke, the beauty of the Embankment will be sadly marred, and the pleasure of a journey by water will be utterly destroyed. We are sure that on this matter being represented to the Council it will take steps to set its own house, as it were, in order, otherwise its praiseworthy crusade against manufacturers, the proprietors of hotels and restaurants, and others who commit a smoke nuisance will be nullified by its own neglect in the same matter elsewhere. Perhaps it is that the funnels of the new steamers are shorter than those of the old steamers but the London County Council steamers should be exemplary in this matter and our health authorities will do well to show their sincerity of purpose by demonstrating to others that the furnaces of river steamers need not be producers of smoke and vitiators of the otherwise fresh and pure river air.

PATHOLOGY AT OXFORD.

ON June 20th a deputation representing the graduates in medicine of the University, consisting of Sir William S. Church, Dr. S. J. Sharkey, Dr. G. I. Schorstein, Dr. W. Collier, and Mr. Whitley, presented an address to the Vice-Chancellor in Convocation. The purport of the address was to lay before the University a statement of the steps already taken to further pathological study in the University. The appeal for support, which had so far been limited to members of the profession, had resulted in the raising of a sum of £500 which was allocated to the ultimate endowment of the chair of pathology. It was now intended to appeal to the general public. Sir William Church concluded by asking the Vice-Chancellor to receive the address and an album containing 200 signatures. The Vice-Chancellor, in receiving the address, said that he was pleased that the importance of the chair should be thus emphasised. We are glad to see that the medical graduates of Oxford are doing what they can to place the chair of pathology upon a sound financial footing. But they are comparatively few in number and so we trust that other Oxford men and even members of the general public will contribute. If a sum of £10,000 could be raised which would provide the chair with an endowment of £300 per annum the University chest might make a larger grant than it at present feels justified in doing.

TOXIC SYMPTOMS AFTER OPERATIONS ON HYDATID CYSTS.

THE production of toxic symptoms by operations on hydatid cysts does not seem to have received much notice in English works. Thus the Australian writers, Dr. J. C. Verco and Dr. E. C. Stirling, in Allbutt's "System of Medicine," refer only to an urticarial rash. In the *Archives Générales de Médecine* of May 23rd Dr. Fuster and Dr. Godlewski have published the following case of "intoxication hydatique suraigue tardive." A man, aged 26 years, was admitted into hospital on Feb. 16th, 1905, for a tumour of the liver. He had been a soldier and had served in Africa, where he suffered from malarial fever. In August, 1904, he felt pain in the hepatic region and readily became fatigued. For the previous two months he had noticed a small tumour in the right hypochondrium. Examination showed an ovoid tumour which projected below the end of the seventh rib. The tumour was hard and gave the sensation of a cyst. There were slight hypogastric pain, a continual feeling of hunger, boulimia, constipation, and impeded respiration. On Feb. 22nd an incision was made over the tumour, a trocar was inserted, and a jet of limpid liquid escaped which contained a hydatid vesicle. A tumblerful of fluid flowed out and a solution of formol, 1 in 100, was injected into the cavity. The visceral peritoneum was stitched to the parietal and the sac was opened and 30 hydatid vesicles were extracted from it. The lining membrane of the sac was removed by curetting. A large drainage-tube was inserted and the wound was closed. The patient progressed until the morning of the 27th, when he could not sleep and complained of pruritus in the abdomen and limbs. No trace of urticaria could be found. The wound was in good condition and there was not a drop of pus. Clear liquid containing two flattened daughter vesicles was issuing from the tube. At noon the pruritus increased and at 3 P.M. the respiration became jerky. The patient perspired profusely and he sat in bed with his head hanging forward and could not raise it. The jaws were closed as if from trismus but could be opened easily. Kernig's sign was present. At midnight the head was maintained in the same position by slight contracture. The perspiration was diminished and there were jerky and convulsive movements of the limbs. There was a good pulse of 100 and the temperature was normal. At 9 A.M. on the following day the symptoms persisted, the intelligence was preserved, the respiration was of diaphragmatic type and jerky, and there was hiccough. There were asphyxial crises, cyanosed lips, local asphyxia of the extremities, and cold sweats. Convulsive movements took place. There were trismus, contracture of the neck, and involuntary grimacing. The patient replied to questions but no longer saw anything and the corneæ lost their lustre. The crises occurred more frequently, the respirations became more convulsive, the pulse became slower, and death occurred at 2 P.M. The necropsy showed a hydatid cyst of the size of the fœtal head growing from the right lobe of the liver and intimately adherent to the duodenum, the pancreas, and the posterior surface of the pylorus. It contained no vesicles and there was not a trace of pus. The wall was very vascular. The other abdominal organs were normal except that the spleen was large. The meninges and brain were congested and the latter was œdematous. It is noteworthy that symptoms did not

appear until five days after the operation. Several cases have been recorded in which death occurred immediately after operation on a hydatid cyst, but such a late appearance of symptoms is rare. However, cases have been recorded in which symptoms appeared on the third and on the fifth days. Older writers (Cadet de Gassicourt and Frérichs) thought that such symptoms were due to a subacute inflammatory or septic process. But in this case there was no trace of peritonitis and there was no pyrexia. The most rational hypothesis is that the symptoms are a toxic effect of the hydatid fluid. Mr. Thomas Bryant has recorded a case in which some seconds after puncture of a hydatid cyst vomiting, syncope, and epileptiform convulsions occurred.[1] Chazoulière has reported the case of a man, aged 38 years, who had a hydatid cyst for 20 years. Four days before admission into hospital he was attacked with hiccough, fever, rapid respiration, and convulsions of the upper limbs. On admission the temperature was 104·9° F. On the following day there were coma and contracture of muscles and death occurred during an epileptiform fit. The necropsy showed diaphragmatic peritonitis and hydatid fluid in the peritoneal cavity. Chauffard has described the case of a vigorous man, aged 35 years, who had a hydatid cyst of the liver. After an exploratory puncture there followed malaise, anguish, and agitation. The patient suddenly scratched the neck, internal surfaces of the thighs, and lower abdomen. Two minutes later there was involuntary grimacing, with tonic contraction of the limbs, spasms of the face, cyanosis, and foaming at the mouth. After an interval of a minute a second attack of convulsions occurred and was followed by asphyxia and death 25 minutes after the puncture. The liquid of hydatid cysts seems to contain toxins which some have described as ptomaines, others as toxalbumins. The experimental injection of the liquid into the peritoneal cavity of animals has given variable results. Sometimes no effect was produced. In other cases such phenomena as fever, convulsive movements more or less generalised, and slow and difficult respiration followed. Intravenous injection causes more acute symptoms. These facts agree with the clinical observations that the symptoms of hydatid intoxication are variable. Pruritus, accompanied or not by urticaria, and erythema have been observed. Gastro-intestinal symptoms, such as nausea, vomiting, or diarrhœa, may occur. The most frequent results are collapse and syncope accompanied by cold sweats and coldness of the extremities. Often the pulse is strong and slow. Sometimes there is also acute dyspnœa; there may be crises of asphyxia with slow respiration, which may be suspended, and cyanosis of the face and extremities, or there may be distressing hiccough. The crisis lasts two or three minutes. Death may occur from asphyxia or syncope. Absorption of the hydatid fluid seems to take place either through the peritoneum or through the wound. No method of operating furnishes a safeguard against such accidents which, however, are rare.

[1] Transactions of the Clinical Society, 1877–78, p. 230.

ROYAL COLLEGE OF SURGEONS OF ENGLAND: ELECTION OF MEMBERS OF COUNCIL.

A SOMEWHAT unusual event has occurred in connexion with the approaching election at the Royal College of Surgeons of England. Mr. W. Bruce Clarke was one of the candidates; he had been nominated and his name had been placed on the voting papers, but he has now withdrawn. The reason for this has been given in a circular letter which he has addressed to the Fellows. Mr. Bruce Clarke states that when he became a candidate for the Council he was not aware that Mr. Harrison Cripps, who is his senior colleague at St. Bartholomew's Hospital, had decided to stand; but when he found that Mr. Cripps had been nominated he decided to withdraw. Under the regulations of the College Mr. Bruce Clarke's name will still have to come before the electors, as a candidate who has been nominated cannot withdraw his name, but, of course, Mr. Bruce Clarke's intimation that he does not wish to stand will have almost the same effect—the electors will not give him any votes. As the case now stands there will be only one unsuccessful candidate and this is certainly a condition of things which has never existed before at the Royal College of Surgeons. It is necessary that six Fellows should be present before the counting of the votes can begin and we would therefore suggest that any Fellows who can spare the few minutes needed should attend at the College to assist in the election. The time of the commencement of the election is 2 P.M. on Thursday, July 6th.

THE ORDER OF ST. JOHN OF JERUSALEM IN ENGLAND.

ON June 22nd the celebration of the annual festival of the Order of St. John of Jerusalem in England was inaugurated by a sermon preached in St. John's parish church, Clerkenwell, London, by Archdeacon Sinclair. Referring to the work of the British Ophthalmic Hospital at Jerusalem, the Archdeacon of London said that the hospital contained 42 beds and that 560 in-patients were admitted in four months. The new out-patient cases numbered 6945. The operations performed were 1710, 898 of which were serious enough for the administration of anæsthetics. Such work was better than all the conquests of the most heroic Grand Masters of ancient days. The ambulance branch of the Order was constantly performing public service and the Order was diffusing the spirit of health and healing among the community. Subsequently the members of the Order paid a visit to the crypt and adjoining chapel erected by the Knights Hospitallers *circa* A.D. 1170. The altar of the chapel has recently been provided with a hanging of old needlework presented by Lady Galway and believed to have adorned originally the chapel of St. John in the cathedral of Florence. Later, the annual general assembly was held in the St. John's Gate, Clerkenwell, under the presidency of Lord Egerton of Tatton, Chancellor of the Order, and on the following morning Holy Communion was celebrated in St. John's parish church.

DR. ARMAND BERNARD AND THE LIVERPOOL ROYAL INFIRMARY.

MUCH regret was manifested in professional circles in Liverpool when it became known recently that Dr. Armand Bernard, surgeon to the lock department of the Liverpool Royal Infirmary, and for some time the senior member of the staff of the hospital, was about to resign in consequence of his having completed his term of office as defined by the laws. It was felt that Dr. Bernard deserved some special consideration from the fact that at the time of the rebuilding of the infirmary he relinquished his wards which were utilised for medical cases during the four years from the closure of the old infirmary in 1887 to the opening of the new infirmary in 1891. As the lock wards were not rebuilt Dr. Bernard received no compensation for disturbance in the shape of improved accommodation, and the four years were, therefore, a dead loss to him. The committee of the Royal Infirmary has therefore decided that Dr. Bernard shall continue in office for two years longer. It should be pointed out, as justifying this resolution, that there is no assistant surgeon to the lock department, so that it does not keep back the promotion of any junior member of the staff and also that Dr. Bernard is clinical lecturer on venereal diseases in the University of Liverpool and the only systematic clinical teacher in that

subject in the city. His Saturday morning demonstrations constitute an important part of the clinical teaching of the infirmary and are highly appreciated by the students and it is a matter for congratulation that they are to be continued.

"CHEMIST-OPTICIANS."

A RECENT number of our esteemed contemporary the *Pharmaceutical Journal* contains evidence that the curious hybrid designation above printed is shortly to come into use among dispensing chemists and that the action of spectacle-sellers in setting themselves up as practitioners in ophthalmology is bringing into the field a body of rivals who intend to dispute with them the profits of the new calling. "A Chemist-Optician Candidate" has been communicating to the *Pharmaceutical Journal* the particulars of an examination to which he has been subjected by the Spectacle Makers' Company and he relates his success in diagnosing and in prescribing for a case of compound myopic astigmatism and a case of "4 D. of esophoria in each eye." It seems unkind on the part of the spectacle makers thus to raise up rivals to the members of their own fraternity, and it is difficult to say at what point the influence of their proceedings will be stayed. Obviously, no "counter prescribing" will for the future be complete unless it takes due account of "eye-strain"; and before long we may have "*mediste*-opticians" who will undertake to supply fashionable ladies with glasses not only adapted to the requirements of their eyes but also so tinted and so constructed as to be in harmony with their successive variations of costume.

"RETURN" CASES OF SCARLET FEVER.

THE occurrence of so-called "return" cases of scarlet fever—that is, fresh cases apparently due to infection from individuals discharged from isolation hospitals as cured and non-infective—demands a careful consideration of the duration of the infective stage of the disease and the conditions which tend to prolong it. That such cases occur there seems to be no doubt, and Dr. Egerton H. Williams in his annual report of the infectious disease hospitals of the city of Sheffield for the year 1904 gives some interesting statistics. In a total of 1981 cases discharged from the hospitals after scarlet fever 70 were associated with the reappearance of that disease in the houses to which they returned or its development among persons coming in contact with them. On investigation of these 70 cases, however, it was ascertained that in a certain number other sources of infection could be found, so that Dr. Williams was able to eliminate 24 of them. Of the remaining 46, 19 were regarded as "improbable return" cases, leaving 27 "possible" cases—that is, cases in which no other source of infection could be traced and which were therefore probably true "return" cases. The importance of this matter is emphasised by a recent legal action in the Court of Nisi Prius before Mr. Justice Walton which is noticed in the issue of the *Times* of June 13th among notable law cases. The son of the plaintiff in this action when suffering from scarlet fever was removed to the hospital for infectious diseases provided by the Liverpool corporation. On his return home from the hospital he is stated to have spread the disease among his brothers and sisters. The jury found that there was a want of reasonable skill and care on the part of the medical practitioner appointed by the corporation in discharging the patient, and it was contended that the corporation was answerable for his acts. The judge, however, ruled otherwise, stating that the practitioner, though a servant of the corporation for some purposes, was not such for others; in discharging patients he acted merely as the adviser of the corporation. It is now very generally admitted that the discharges from the nose, throat, and ears of patients convalescing from scarlet fever are more infective than the desquamating cuticle except perhaps that first shed, while the secondary desquamation which occurs in some cases is probably not infectious at all. In Dr. Williams's interesting report previously referred to, it was found on investigation of the 70 individuals suspected of causing "return" cases that 13 had discharging ears, 14 a discharge from the nose, and five a sore mouth or nose, the remainder showing no abnormal conditions. At the time of discharge from the hospital all were noted as being perfectly healthy with the exception of the 13 ear cases. In the Sheffield fever hospitals cases with discharging nose or ears are isolated and if the discharge does not clear up while in hospital in ear cases arrangements are made with the parents of patients prior to discharge about their subsequent treatment. During the year 1904 303 cases were thus isolated, 112 going out cured. Of the remaining 191 only the 13 cases just referred to were suspected of producing "return" cases and on investigation of these seven were definitely proved not to have done so. These figures show the importance and the relative frequency of "return" cases; in other series of cases the frequency has been found to be from 1 to 1·86 per cent. They illustrate also the difficulties in determining when the period of isolation of cases of scarlet fever may be safely terminated not only in institutions but also in private practice. The Medical Officers of Schools Association advises that isolation should be maintained for "not less than six weeks from the date of the appearance of the rash provided convalescence is completed and desquamation has ceased, and there is no sore throat, discharge from ear, suppurating glands, or eczematous patches." Dr. Williams's figures and the experience of others show, however, that in spite of careful examination of cases before discharge "return" cases may occur even after prolonged isolation, the average stay in hospital of his 70 cases being 54·3 days. Unfortunately at present there is no bacteriological or other test available for determining whether cases are infective or not and no infallible means of disinfection are known—facts which make it difficult to endorse the views of the jury in the case mentioned above.

CERTIFICATES OF PROFICIENCY IN VACCINATION.

THE provisions of the Vaccination Order of 1898 required that any medical practitioner before he could enter into a contract with a board of guardians for the performance of public vaccination should produce a certificate of proficiency in vaccination. If he had not obtained such a certificate as a condition of obtaining his degree, diploma, or licence, he had to obtain one from some person duly authorised by the Local Government Board, and this could only be done after the applicant had been duly instructed and examined in the practice of vaccination by such duly authorised person. The Local Government Board has now issued an Order amending that of 1898 and in a circular accompanying that Order the Board sets forth the reasons which have induced it to issue the amending Order as follows:—

> It has been represented to the Board, however, that under this provision a person who took a diploma or degree from an examining body at a date when the examining body did not require as a condition of such diploma or degree the production of the prescribed certificate of proficiency in vaccination is required by the Order of 1898 to devote a considerable time to receiving instruction in vaccination, although, as the result of experience, he may be fully conversant with the practice of vaccination and competent to perform the work of a public vaccinator. With a view of meeting this point, so far as can properly be done, the Board have decided to vary the provisions of the Order, so that in certain cases of the kind the certificate of proficiency may be obtainable by a practitioner after examination only and without a special course of instruction immediately before the examination.

The "certain cases of the kind" are defined as follows; such certificates may be issued—

> (a) To any registered medical practitioner who possesses a diploma, licence, or degree conferring the right of registration under the Medical Acts, and granted by an examining body in England and

Wales or Scotland prior to the date at which the examining body first required, as a condition of obtaining the diploma, licence, or degree, a certificate of proficiency in vaccination given by a person authorised by us to act for the purpose; and (b) to any registered medical practitioner who possesses a diploma, licence, or degree which confers the right of registration under the Medical Acts and which has been or may be granted by an examining body in Ireland, before Jan. 1st, 1906.

The circular accompanying the Order gives the names of persons who have been authorised by the Local Government Board to give certificates after examination only and the stations where such examinations are held. They are eight in number, situated respectively in London, Birmingham, Bristol, Liverpool, Newcastle-on-Tyne, Aberdeen, Edinburgh, and Dublin. The London certificates after examination may be obtained at Tolmers-square Institute, Drummond-street, N.W.

WOMEN AS PHARMACISTS.

THERE can be no reasonable objection to the employment of women in pharmacy so long as they are duly qualified and the qualification of the Pharmaceutical Society to dispense medicines should be insisted upon as much in their case as in that of men pharmacists. Temptations there are, no doubt, open to qualified persons to offer their services to a company of unqualified persons in order to carry on for them a pharmaceutical business. The temptation has extended to women pharmacists and we learn that a company has been promoted with a qualified woman chemist and druggist on the directorate to conduct amongst other things a department of pharmacy. The real nature of the business may be gathered from the fact that "the other things" include the businesses of apothecaries (?), engineers, journalists, moneylenders, house agents, bill-posters, coal merchants, grocers, printers, dentists, and tobacconists.

THE LOCATION OF THE FIBRES FOR TEMPERATURE AND PAIN IN THE TRACT OF GOWERS.

MANY writers think that the sensations of pain and temperature are conveyed in the spinal cord by the tracts of Gowers but the evidence is not conclusive. In the *Journal of Nervous and Mental Disease* Professor W. G. Spiller has recorded a case which appears to give the best evidence yet offered of this view. A man, aged 23 years, came under observation on Sept. 1st, 1904. Four months previously he began to have pain in the lumbar region and abdomen. Soon numbness was felt in the feet and gradually involved the legs below the knees. There was extreme genu valgum which had existed for about five years. On the abdomen were scars which the patient said were due to painless burns in childhood. In the lower limbs resistance to passive movements was slightly diminished and sensibility to touch was normal or nearly normal, while sensibility to pain was abolished or almost abolished. Sensibility to temperature was almost lost below the knees and was much impaired in the thighs and lower part of the trunk. There was slight kyphosis about the tenth dorsal vertebra. After a fall backwards down a flight of steps the patient became completely paralysed in the lower limbs. Sensibility to touch was then lost in the right lower limb for a time. Sensibility to temperature and pain was absent in the right leg and foot and in the left foot. The knee-jerks were increased and Babinski's sign was present. Later sensibility to touch was found everywhere in the lower limbs and sensibility to pain was irregularly present, the response being very uncertain, and sensibility to temperature was much impaired. The patient died four months after the accident. The necropsy showed tuberculous meningitis and caries of the vertebræ and a small tubercle in the right lateral column at the lower end of the thoracic cord involving Gowers's tract. About an inch higher another small tubercle was found involving the left tract of Gowers. There was some myelitis which evidently had chiefly developed after the fall, for previously the weakness in the lower limbs was slight.

CONVERSAZIONE AT UNIVERSITY COLLEGE, LONDON.

A RECEPTION and conversazione were held at University College, Gower-street, W.C., on June 28th. The proceedings were a great success and there was a large company present attracted by the excellent programme provided and the specially interesting character of the scientific exhibits. The visitors were received on the grand staircase by the Treasurer, the Principal, the Dean of the Faculty of Arts and Laws, the Dean of the Faculty of Science, the Dean of the Faculty of Medicine, and the President of the Union Society. Amongst the exhibits which excited considerable interest were Professor J. Norman Collie's Chinese and Japanese art collection; antiquities from Egypt and Sinai, by Professor Flinders Petrie; radio-active phenomena, by Sir William Ramsay; mathematical instruments and models, by Professor Karl Pearson; trypanosomata, by Dr. D. N. Nabarro and Dr. T. H. C. Stevenson; and a botanical collection, by Professor F. W. Oliver. During the evening short lectures were given with lantern illustrations. The occasion provided a perfect feast of things literary, historic, artistic, and scientific.

PROPOSED NATIONAL LEAGUE FOR PHYSICAL EDUCATION AND IMPROVEMENT.

A DINNER was given at the Hotel Cecil on June 24th under the chairmanship of the Bishop of Ripon, a number of representatives of the press throughout the country being invited to meet the members of the proposed National League for Physical Education and Improvement. After the usual loyal toasts, "Success to the Proposed National League" was proposed by Sir Henry Craik, K.C.B., who referred to the objects of the movement and to the part played by Sir Lauder Brunton in its inception. General Sir Frederick Maurice, K.C.B., in proposing the toast of "The Press," appealed to the patriotic and altruistic sentiments of those members present to help forward the movement, which was one of truly national importance. Sir Hugh Gilzean-Reid, in reply, recognised the importance of the work proposed to be undertaken by the League and foretold success for it. In reply to the toast of his health, proposed by the Rev. Russell H. Wakefield, Mayor of Marylebone, the Bishop of Ripon referred in eloquent words to the need for such a movement and the useful part the League could play in correlating and extending existing agencies, in promoting the best interests of the nation and improving the standard of national health and physique. The objects of the proposed League are such that all medical men will wish it hearty success and the need for its existence is emphasised by the report of the inter-departmental committee and by the percentage of rejections of those offering themselves for military service.

WE regret to announce the death of Surgeon-General James Macnabb Cuningham, C.S.I., I.M.S., Honorary Surgeon to the King, which took place on June 27th; and of Inspector-General Alexander Turnbull, R.N. (retired), at the age of 67 years, on June 22nd. Inspector-General Turnbull, as staff-surgeon of the *Bacchante* in 1880–82, was in medical charge of the late Prince Albert Victor Duke of Clarence and of Prince George (now Prince of Wales) on board that vessel.

THE distribution of prizes to the students of St. Bartholomew's Hospital will be held in the great hall of the hospital on Wednesday, July 12th, at 3.30 P.M. The prizes will be distributed by the Right Honourable Lord Ludlow.

MEDICINE, ITS PRACTICE AND ITS PUBLIC RELATIONS.

CHAPTER XVIII.[1]

THE PUBLIC AND THE MEDICAL PROFESSION.

Bad Effects of the Want of Concord among Medical Men.—Medical Etiquette and Medical Ethics.—The Public Conception of Medical Duties.

IT is an especially unfortunate commentary upon the great good which would follow upon medical organisation that at the present moment certain sections of the medical profession should be, or should so often appear to be, directly pitted against each other. There is a tendency on the part of certain general practitioners whose grievances are undoubtedly the hardest to bear to regard consulting practitioners and the General Medical Council, acting separately or in combination, as their natural enemies. They consider and write that "the prestige of the general practitioner has been lowered" because from the many circumstances which have been narrated his emoluments have decreased. This is a most unlucky use of the word prestige, the only lowering of prestige that has taken place being that which must follow upon the public exhibition of professional bad feeling. The general practitioner has the sympathy of all the profession who see him preyed on by quacks and irregular workers in medical fields and they are only opponents to reform—that is, they perpetuate the bad things now existing—who represent all consulting medical men and all public medical officials as the oppressors of the general practitioner, or who suggest that the General Medical Council has no care for his wrongs.

There are unscrupulous consultants who do their calling, as well as the public, great disservice by endeavouring to remain in sole attendance upon patients who have been brought to their attention by general practitioners. Any attempt to undermine the confidence of the public or to supplant the general practitioner will surely bring the system under which the family medical adviser is wont to obtain an independent and perhaps specialised opinion upon a difficult case into disrepute. The public is so largely a gainer by the readiness with which medical men, as a rule, are willing to submit the diagnosis and treatment of cases under their charge to the critical inspection of their colleagues, that the consultant practitioner who attempts to secure a patient for himself, by replacing the family man who first introduced the patient to him, not only commits a dishonourable act but injures the public in a very direct manner. The position so seldom arises that to describe the consulting medical man as living by piratical excursions into the territory of his brethren is ridiculous, and mischievous as tending to lower the public estimate of the medical profession. The same may be said of violent diatribes against medical officers of health and public vaccinators. Undoubtedly both the medical officer of health and the public vaccinator are by the circumstances of their offices sometimes placed in an antagonistic position to the general practitioner, but these are matters to be discussed temperately with a view to their amendment and not to be accepted in a sweeping way as proofs that the general practitioner is wantonly maltreated by his fellows. The monopoly which has been created in behalf of the public vaccinators is unfortunate and there is no reason why it should not be done away with, but to effect this arguments will have to be employed. The bald statement that public vaccinators receive fees which should be shared among their brethren cannot possibly stir any legislature to action, while not to recognise the arduous, delicate, and valuable work that is being done by public vaccinators is blind—as blind and ignorant as it is to represent all public vaccinators as overpaid plutocrats. The medical men who talk in this way and who regard more temperate views as cowardly are committing a serious error. At a time when there are many real and necessary reforms awaiting initiation they insult the intelligence of those who might be willing to help.

The growth of a general desire among medical men to form a united profession must occur before many of the disabilities under which the profession lies will be removed, but it is certain that the public would more often be on the side of the medical man in his demands for intelligent and sympathetic treatment if the public had a clearer conception of his difficulties. Next to union among medical men public sympathy is required. The various circumstances which conspire to press hardly in different ways upon different sections of the profession are not in the least understood by the public, who regard anything in the nature of a cry for reform among medical men either as a proof that the ranks of the profession are overcrowded or as a design upon the part of certain operatives, banded together by a mysterious tie called medical etiquette, to strike for higher pay. With respect to the alleged overcrowding of the medical profession the figures, already quoted,[2] show that there is misconception on this point. There are too many medical men in certain places trying to do the same thing—that is to say, that the distribution of medical men is faulty both as regards their economic position and as regards their public utility—but the numerical ratio of the population to the medical profession has not fallen. And similarly it is a grave mistake to suppose that the members of the medical profession are in corrupt league to extract money out of the public, though it is not difficult to see how this conception had origin. The most evident examples of union among medical men have been the local combinations to resist the tyranny of medical aid associations and of workmen's clubs. The battle having been fought in these cases largely upon the question of remuneration the public has been led to believe that this is the only question at issue and does not see the underlying difficulty, viz., that the lay employer—whether this be a Government department, a municipality, or a miner's foreman—frequently fails to regard medical service as in any way differing from the service of the tradesman in response to a wage. There are coroners of the same turn of mind who regard the wish of medical men to give evidence where it would conduce to the return of a just verdict as proof of hunger for a fee; and there are barristers and even judges who consider that every expression of opinion from a medical witness must be made in deference to his retainer as an expert. Judges, barristers, and coroners give voice to these views, certain journals give prominence to them, and lo! there is the medical profession branded as a venal association that is ever working for its own aggrandisement against the public weal. What reform would such a profession be likely to ask for save such as would put money in its purse?

The deduction is fair enough but it is made from an incorrect observation of facts. What, then, is medical etiquette? It is the behaviour entailed upon medical men by the observance of medical ethics, and the rules regulating medical conduct are designed with a view of marking the difference between the profession of medicine and a trade. There is no need more than to indicate the distinction, for the comparison has been drawn so frequently. A profession and a trade have this in common—each is a vocation in which a man seeks to make a livelihood by serving the public. But in trade the rivals can compete for public favour by asserting that their methods of ministering to their clients are better than those of others following the same calling. They can do this without taking an unfair advantage of the public, for the public can judge whether the wares sold to them are what they want, are up to sample, and are in accordance with advertised claims. In a profession these assertions cannot be made without a risk of deceiving the public, because the public cannot judge of their truth. The specialised work of a medical man cannot be gauged by any who have not special knowledge, so that for the protection of the public medical men have agreed not to make any public claims to skill or learning. In this way the loud pretender is, at any rate to a great extent, defeated, but from this situation arises the fact that medical men must trust each other a great deal and must maintain between each other a high code of honour. They must treat each other as they would be treated.

The public belief that medical men are guided in their behaviour by a set of quaint and secret rules designed to

[1] Chapters I., II., III., IV., V., VI., VII., VIII., IX., X., XI., XII., XIII., XIV., XV., XVI., and XVII. were published in THE LANCET of Feb. 18th (p. 447) and 25th (p. 517), March 4th (p. 593), 18th (p. 736), and 25th (p. 817), April 1st (p. 877), 15th (p. 1017), 22nd (p. 1089), and 29th (p. 1151), May 6th (p. 1218), 13th (p. 1287), 20th (p. 1375), and 27th (p. 1449), June 3rd (p. 1533), 10th (p. 1584), 17th (p. 1651), and 24th (p. 1741), 1905, respectively.

[2] See Chapter III.

maintain medical interests at the expense of the popular purse receives confirmation from the fact that many medical men appear to want to regulate their conduct towards each other and towards the public by some elaborate code which shall meet any professional difficulties that may arise. They do not find it a sufficiently explicit position merely to say that obedience to the dictates of medical ethics implies application to the ordinary chances of professional life of the excellent rule that a man should do as he would be done by. If only medical men and the public would see that the gist of medical ethics lies in that sentence the medical attitude in public affairs would be better comprehended. Aphoristic by-laws designed to meet special cases are often useful and it is not intended to decry the value of one or two codes of ethics that have been published, but such books are likely to mislead the professional man as much as the public, if their limitations are not recognised, by causing both to think more of special instances than of general principles. Take, for example, this common situation. A medical man is in attendance upon a patient and the patient desires to discharge him and to employ somebody else. The patient finds that there is difficulty in obtaining the service of the second medical man who, though prepared perhaps to assist in any acute emergency, declines to take over the case save from the hands of the previous medical man. The patient complains that obstacles are placed in the way of his obtaining the medical advice that he wishes to have, and blames "medical etiquette." His view is supported by the unfortunate circumstance that many medical men write and speak as if they believed that, having once been called in to see a patient, they had obtained a vested right in that patient and could on no account be dislodged from his bedside. Now clearly a patient has the right to see whatever medical man he likes, but it has been thought advisable by the medical profession, in the interests as much of the patient as of the medical man, to lay it down that a second medical man should not attend until the first medical man has been definitely discharged from the case, when the second medical man would receive from the first medical man a statement of the circumstances. The reason for this is obvious. The patient being without medical learning cannot know that the treatment, which is apparently doing him no good, is the wrong treatment, and cannot tell a second medical man even what that treatment has been. If the second medical man does not consult with the first he is treating the case without being in possession of the facts necessary to make a diagnosis. If the case goes well he will obtain credit at the expense of a brother practitioner which he may not deserve, and mark—he will obtain the credit even though he repudiates its justice. If the case goes ill it will be considered that the preliminary mismanagement of the first medical man had dictated the bad issue. Now let the second medical man consider whether he himself would like to be placed in the position in which the patient has placed the first medical man. This is but one example of situations that may arise by the score and most of the others can be similarly solved by the simple application of the same rule. A code-book undoubtedly has its uses if too much is not expected of it, but however well drawn up it may tend to elaborate and to obscure what should be simple, while any attempt to meet all cases by special decisions must fail. As life in general gets more and more complicated it becomes more and more impossible to lay down cut-and-dried rules to meet all sorts of emergencies.

The belief that the medical profession is governed by a set of rules framed with a special design to exploit the public is blended in the public mind, to the detriment of the profession, with a very different idea. The public conceives that medical service must be in a sense a poor thing because so much of it is rendered gratuitously. The public view—at any rate the view of the poorer section of the public—of the connexion of a member of the medical staff of a hospital with his institution is a comically paradoxical one. First it is thought that the medical officer is paid for his work and is greedy to make money out of the afflictions of his fellows. On learning that he is not paid at all the public at once thinks meanly of his exertions, not being able to understand that good work can be unpaid work. It is not understood that gratuitous work is done by medical men because the experience so gained is valuable to mankind and because only in this way can material for scientific progress be obtained, every whit as much as because, without the experience furnished by hospital wards, few medical men can become great and very few can become successful. Legitimate ambition and legitimate desire to be properly paid for good work play their part in inspiring the honorary staffs of our great free hospitals, for the value of the hospital connexion is realised to its full; but the desire to increase the stock of the world's wisdom and to decrease the sum of human misery, the love of science for itself and affection for the medical profession,—these things also confirm medical men in their willingness to serve the sick poor without reward in money, indeed at a vast expense of valuable time and knowledge. This is the professional conception of the situation and it should be understood by the public.

But undoubtedly those who see in this altruism of the medical profession a confession of weakness, and who are influenced accordingly to treat the members of the medical profession as of no particular account, receive from other circumstances frequent support. For it is not only the member of the hospital staff who works for nothing but all medical men are constantly serving the public gratuitously. The General Medical Council, which does work of paramount importance to the State, receives no subsidy whatever from the State and has accordingly been in considerable pecuniary trouble. When the country decided that the registration of midwives was necessary machinery in the shape of the Midwives Board was devised for the proper examination of candidates, for maintaining an official roll of the women, and for exercising disciplinary powers over them. In the constitution of the Midwives Board every precaution was taken to guard the interests of the public and to secure fair play for the registered midwife, but there was no provision made for paying the Midwives Board. The work is done for the State by busy medical men and busy public-spirited women and should be paid for by the State. Again, under the Midwives Act the midwives are in certain circumstances required to seek medical coöperation, but the Act contains no provision for the payment of the medical man, it being apparently taken for granted that he will give his services if the patient cannot afford to pay. The same thing is seen throughout our social scheme, the same very flattering but very embarrassing reliance upon the altruism of the medical profession, and so much has it become the spirit of medical men to give their work away that even such a protest as I am now making will be voted vulgar and "tradesmanlike" by some superior spirits. Why should a medical man be expected to sign dozens of gratuitous certificates? School boards want certificates to explain the absence of their scholars, sick clubs want certificates to guide them in making allowances to their members, life assurance offices want certificates to assist their regular officers to estimate risk; in the last case a minute fee is usually proffered by the office when it is not possible to make the proposer for a policy pay, in the other cases the work is done by the medical profession for nothing. I say "the work" advisedly, for sometimes the filling up and signing of these certificates wastes a serious amount of time and involves considerable writing. All such sick certificates should be paid for either by the persons who want to show them or by the persons who insist upon their being shown. It would be logical to go further and say that death certificates should be made the subject of a fee to medical men. There would be in some respects difficulty in supporting this claim but we may be perfectly certain that nobody but a medical man would ever be expected to give death certificates for nothing. The copies of them, which are not made by medical men, are subject to a fee.

In all public affairs parsimony towards the medical man exists. The scale of remuneration of medical witnesses is ridiculously low. This is acknowledged by everyone but as yet there has been no remedy. Municipal bodies, whose spendthrift policy in every direction is notorious, frequently attempt to get their official sanitary work done on the cheap; a certain class of coroner delights in dispensing with the attendance of a medical man at inquests, alleging with perfect gravity his position as guardian of the public purse in extenuation of his recklessness. Yet surely anyone who thinks must see that the cause of economy is not really served by making the busy medical man unable, save by fining himself a substantial sum of money, to give evidence in a law court, nor by sweating the man on whom the public health of the community exists, nor by increasing the inevitable percentage of unjust verdicts delivered by coroners' juries. Not long ago it was proposed in a certain rural sanitary district that measles should be

mised to the dignity of a notifiable disease, when the rural council in a light-hearted manner resolved to call upon the medical men of the neighbourhood to notify all cases occurring in one household for one fee. The first idea of the authority, in making a proposal believed to be for sanitary progress, was to save a part of the money due for the sanitary assistance of medical men! Why should the first idea of a public body planning a development under an Act of Parliament be to invite the medical practitioners of the neighbourhood to break the law with the view of receiving smaller fees than Parliament has awarded them? Why? First, because it is ingrained in public bodies to try to get medical assistance for nothing; and secondly, because the public, knowing nothing whatever of the details of medical life, believes that an epidemic of measles brings a fortune to the medical men of the neighbourhood. Medical men in a rural district do not make money by the prevalence of measles; on the contrary, an epidemic may leave them out of pocket. Their work is enormously increased but the remuneration, though in the aggregate larger, does not keep pace with the increased expenditure. This is not a theory, it is a fact, and one that it would be just of the public to remember.

I will give one more example of popular misunderstanding of the position of a medical man. It frequently happens that a medical man cannot come to a patient when he is summoned. Sometimes he is under an engagement to go elsewhere at too short an interval, sometimes he is too fatigued, sometimes he declines to come unless his fee is paid. If, unfortunately, the patient dies a coroner's jury almost invariably censures the medical man, the coroner frequently allows them to do so without protesting, and many newspapers, especially those that are conspicuous for printing the indecent advertisements of quacks, join in denunciation of the "callous doctor." In a moment a citizen who perhaps does more work for the public at a low rate of remuneration than anyone else in the community finds to his bewilderment that the simple exercise of his right to attend a case or not has earned him the reputation of a Nero in the neighbourhood. The rider of an ill-informed jury charges him with gross inhumanity in not attending the patient or holds him up to odium because he wanted to be paid for his onerous services. Yet if members of the public would only think they would detect the gross injustice of such a proceeding. In every instance where to do so is a matter of real urgency the medical man goes if possible wherever and whenever he is summoned, and it is a distinct hardship upon the medical profession that the contrary opinion should be held. Although a large proportion of a medical man's practice is unpaid, yet, when it is made clear to him that he is wanted to stand between death and a fellow creature, he goes. He does not think of his fee, he goes. He does not think of his convenience, he goes. But where the imminence of the case is not made clear he does not necessarily attend without a fee. It is not only unfair to expect the reverse but—and this is the point on which emphasis should be laid—it is unfair to those of the community who do pay their medical man that he should be at the beck and call of those who do not. A medical man has rarely any spare time and every extra visit made means a visit the less in some other direction. When a witness at an inquest tells of "a cruel doctor who wouldn't come until his fee was paid down," inquiry (which is so rarely made) would almost invariably elicit that the serious nature of the case had not been made clear.

It would not be difficult to continue to give instances showing that the medical profession does not obtain fair play at the hands of the public, but I think it may be taken as established that such is the case. These things are not narrated in any spirit of grumbling—there has been too much grumbling among medical men. They are set out as indications that the medical profession is very much misunderstood by the public and it seems to me that no effort should be spared to alter this state of affairs. The formation of local medico-ethical societies or the discussion of ethical affairs at local medical societies appears to be the best way of arriving at the solidarity of opinion that must necessarily be a prelude to any real and substantial reform. Such debates might also afford an opportunity of clearing up many points of difficulty, for removing many causes of friction between the medical profession and the public. On nursing questions, on question of hospital administration, on such social questions as the promotion of temperance and the prevention of racial deterioration medical men and laymen constantly confer and with mutual advantage. The assistance of laymen at debates upon questions of professional ethics might be useful; the good feeling evinced by such invitations and acceptations would certainly be very valuable.

If the first step towards the reform of the admitted abuses in the medical profession is the establishment of solidarity among medical men the second is the establishment of confidence between the medical profession and the public. When these two consummations exist reform will be imminent.

(To be continued.)

EPSOM COLLEGE.

THE annual general meeting of the governors of Epsom College was held at the office in Soho-square on Friday, June 23rd, the treasurer, Sir Constantine Holman, M.D., being in the chair. He was supported by a large number of governors, including Sir William Church, Bart. (the chairman of the council), Sir Arthur T. Watson, Bart., K.C., Mr. J. Paul Bush, C.M.G., Mr. G. H. Makins, C.B., Mr. John H. Morgan, C.V.O., Mr. Reginald Harrison, Dr. P. W. Latham, Dr. F. Needham, the Rev. E. W. Northey, and Dr. J. Roberts Thomson. The scrutineers (Dr. Roberts Thomson, Dr. Needham, and Mr. Makins) reported the result of the voting for pensioners and foundation scholars to be as follows:—

PENSIONERS.

Name.	Votes.	Name.	Votes.
1. Mary A. Paul	6370	3. Catherine Reese	5887
2. Mary Sewell	6062	4. Elizabeth Matthews ...	5766

FOUNDATION SCHOLARS.

Name.	Votes.	Name.	Votes
1. Kenneth T. K. Wallington	9147	5. William O. Deacon ...	8324
2. Robert K. MacRoberts...	9068	6. Ronald H. Kershaw ...	7505
3. Bernard S. Pullan... ...	8990	7. Bernard S. Lidiard ...	6352
4. Royale S. Dutton... ...	8667	8. Alexander L. H. Ferguson	5118

The report of the council stated that in order to bring the sanitary arrangements of the College into accordance with modern requirements it had been necessary to undertake works which would probably cost in the aggregate from £4000 to £5000. This very large outlay was to a great extent the result of the imperfect system of laying drains which was in vogue many years ago, and of the omission to remove from the ground disused drains, some of which might ultimately be a source of danger. Moreover, the ventilation of the drains and many of the sanitary fittings needed amendment. As the council deemed it unwise to part with any of the stock belonging to the general purposes fund, it had decided early in the present year to increase the mortgage on the College property from £10,000 to £14,000. Attention was drawn to the fact that the annual general meeting had this year been convened a month later than usual, in order to enable governors who live abroad to vote at the annual election of pensioners and foundation scholars. The council noted with much pleasure the large increase in the number of governors, both annual subscribers and life donors, who reside abroad. Two alterations in the by-laws to be proposed were referred to, one of which will be of great interest to supporters of the charitable side of the institution. Hitherto a donation of ten guineas has had to be given in not more than two payments in order to entitle the donor to be registered a life governor. The council suggested that the stipulation of two payments should be done away with, which will enable one vote for life to be given for each sum of ten guineas, in however many separate sums the money is presented. The council was glad to be able to report satisfactorily on the school, the health of the boys having been on the whole good, the discipline having been excellent, and the usual school games having been played with success. The rifle corps continued to be most successful and the natural history society and other school institutions were flourishing. Nine boys had since the last general meeting passed the whole or a part of the preliminary scientific examination for the degree of M.B., B.S., of the University of London; four boys had passed the University of London matriculation examination in Division 1 and seven in Division 2; seven boys had gained the higher certificate of the Oxford and Cambridge schools examination board with

one distinction and 17 had gained the lower certificate; seven boys had gained the second-class certificate of the College of Preceptors, two boys had obtained the first class certificate for drawing (freehand and model) in the art examinations held under the direction of the Board of Education, and seven had obtained the second-class certificate. After careful inquiry the council had inaugurated a pension scheme by which the assistant masters at the College would have suitable provision made for them at the age of 60 years.

In moving the adoption of the report Sir Constantine Holman referred to the fact that this was the jubilee year of the opening of the College and he expressed the opinion that the founder of the College, the late Mr. John Propert, would have been in every way satisfied with the work as at present carried out, and the late Mr. Lumsden Propert, his son, had held the same opinion. He referred to the never-ending appeals which were necessary in order to continue in full the work of the benevolent side of the College, which required a sum of about £8000 a year, and gave in detail the sums which had had to be spent to maintain buildings at Epsom in proper repair. Having referred to the great services which Sir Joseph Fayrer had rendered for so many years as chairman of the council he congratulated the governors on having secured the services of Sir William Church. He stated that the council had recently decided to follow the example of most of the public schools of the country by giving all the boys meat breakfasts and this alteration had been in force during the current term. In conclusion, he referred to the remarkable result of the voting for pensioners and foundation scholars, 11 out of the 12 candidates recommended as the most urgent cases by the selection committee having been elected.

The report was duly adopted, and other formal work having been carried out, Mr. Stamford Felce, who recently resigned his seat on the council, was elected a vice-president in recognition of his services for many years as a member of the council and as chairman of the finance and selection committees. In moving a vote of thanks to the chairman Sir William Church observed that Sir Constantine Holman had had one wish realised in the change of the official name of the institution to "Epsom College," and he hoped that he would soon have his two other wishes granted—namely, that the institution should be free from debt and that the College should be full.

At the meeting of the council held subsequently Mrs. Swales, the highest on the list of unsuccessful candidates for pensionerships, was elected a pensioner, a vacancy having arisen, and Dr. William Collier, President of the British Medical Association, was elected a member of the council.

Looking Back.

FROM

THE LANCET, *SATURDAY*, June 30, 1827.

HOUSE OF COMMONS.

Wednesday, June 20, 1827.

ROYAL COLLEGE OF SURGEONS.

Mr. WARBURTON presented a Petition from the Royal College of Surgeons, complaining of the Regulations of the College. Ordered to be printed.

Mr. WARBURTON proceeded to make the motion of which he had given notice, respecting the Royal College of Surgeons. He observed that, all the evils which usually resulted from a close corporation of any kind, had manifested themselves in the Institution in question. The interests of the many were sacrificed for the benefit of the few. The enactments of the Corporation, of which the commonalty complained, were as follows:—In 1796, a former Corporation, out of which the present Corporation grew, was, in consequence of some irregularity, dissolved. In 1797, an application was made to Parliament for the purpose of establishing the Corporation anew; and a Bill was brought in for that purpose, granting the proposed Corporation many powers, among which was the extraordinary one of monopolising the lecturing on surgery in London, although at that very time many schools of surgery were in existence in the metropolis. After the Bill had passed through the House of Commons, and through several stages of the House of Lords, great secrecy being observed with respect to its provisions, this strange clause was at length discovered, and the Bill was immediately scouted, as it well deserved to be. In 1800, the College of Surgeons obtained their present Charter from the Crown. It was true that the Charter did not contain any such power as that involved in the clause which he had just described; but the College endeavoured, by means of by-laws, to obtain a similar authority. The evil was, that the individuals of whom the Council of the College consisted, were, more or less, connected with the Hospitals, and with the lectures delivered in those Hospitals; and therefore had a direct interest in framing the by-laws in question. By those by-laws it was declared, that the only regular schools of anatomy and surgery were the hospitals of London, Dublin, Edinburgh, Glasgow, and Aberdeen; that no certificate of a pupil could be received unless he had studied in one of the above, containing a hundred patients, for a year; or in a provincial hospital, containing the same number of patients, two years. It was well known, that in the provincial hospitals it was exceedingly difficult to obtain subjects. London, Dublin, and Glasgow, were the only places in which they could be had with any facility. Formerly, it had been considered as the just reward of a surgeon who distinguished himself at the regular hospitals, that if he established himself as a lecturer in private, his class was likely to be numerously attended. It was not enough now, however, for a young man to produce a certificate of attendance on any of these gentlemen, or even of attendance at foreign hospitals; such as those of Paris, Vienna, &c. He had to complain on behalf of the petitioners, that the examinations by the College were private, and it would be readily conceded that great advantages were in almost all cases attendant upon publicity. The petitioners were no advocates for rendering admission into the profession more easy than it at present was, their object being only to make examinations more fair, and the persons admitted more highly qualified for the duties they would be called upon to perform. The examiners were at present appointed for life; and it happened that the science often got the start of them, and they were behind the knowledge which their younger contemporaries possessed. The examinations were often of a very superficial description; and the Admiralty and Military Boards were so dissatisfied with the examinations of the College, that they were obliged to subject persons to a further scrutiny, to ascertain whether they were fit for the public service. It was considered by the College, that all persons who practised the obstetric branch of the profession, as well as all apothecaries, were less qualified than others for the honours and advantages of that institution. Another complaint was, that the College had passed a by-law, which required every student, before examination, to produce a certificate that he had attended a course of winter lectures. This extraordinary by-law was not confined merely to dissection, but it extended to surgery and anatomy. This was the means of depriving of pupils, and consequently of suppressing the lectures which many able men had been accustomed to give in the summer. It was justly complained that the College had made an invidious distinction as to the entrance granted to members and to students into the Theatre. The Museum was opened only twice a week, and then only two hours on each day. This museum was purchased in 1799, and was removed to its present place of accommodation in 1806, and yet no catalogue of its contents was published, and the collection was consequently rendered useless. At the time of making the purchase, the collection contained many MS. of the late John Hunter; and these, from a certain degree of neglect in the council, had been suffered to be destroyed. He regretted that it was now too late to refer these matters to a committee of the house. At an early period of the next session, if the petitioners continued in the same mind as at present, he should certainly move for a committee to inquire into the subject. In the meantime he should move for certain papers, which would afford the necessary information for the guidance of the house. The honourable member concluded by moving for a return from the College of Surgeons, of all public money lent or granted to the College from 1799 to the present time, for the purchase of the Hunterian Museum, and for building, purchasing, repairing, and improving the said College, with the appropriation and expenditure thereof—the regulations under which the members and students are admitted to the

Hunterian Museum, and to the Library of the College—the number of persons examined for practice in surgery—and an account of all moneys received by the College in 1825 and 1826, on account of the members.[1]

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 9069 births and 3877 deaths were registered during the week ending June 24th. The annual rate of mortality in these towns, which had been 14·7, 13·5, and 13·4 per 1000 in the three preceding weeks, further declined last week to 13·0 per 1000. In London the death-rate was 11·7 per 1000, while it averaged 13·5 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 6·7 in Wallasey, 6·8 in Hornsey and in Handsworth (Staffs), 7·4 in Croydon, 7·6 in Tottenham, 8·2 in King's Norton, 8·3 in Willesden, and 8·6 in Southampton; the highest death-rates were 18·1 in Sunderland, 18·4 in Ipswich, 18·5 in Burnley and in Tynemouth, 20·3 in Preston, and 24·2 in Oldham. The 3877 deaths in these towns last week included 348 deaths which were referred to the principal infectious diseases, against 410, 413, and 355 in the three preceding weeks; of these 348 deaths, 127 resulted from measles, 74 from whooping-cough, 67 from diarrhœa, 39 from diphtheria, 23 from scarlet fever, and 18 from "fever" (principally enteric), but not any from small-pox. In Croydon, Leyton, Hastings, Brighton, Norwich, Walsall, Stockport, Huddersfield, and in 11 other smaller towns, no death from any of the principal diseases was registered last week; they caused the highest death-rates in Walthamstow, Northampton, West Bromwich, Coventry, Bootle, Sheffield, and Sunderland. The greatest proportional mortality from measles occurred in Northampton, West Bromwich, Smethwick, Coventry, Barrow-in-Furness, Sheffield, and Sunderland; from scarlet fever in Bootle; from diphtheria in East Ham, Middlesbrough, and South Shields; from whooping-cough in Walthamstow and Oldham; and from diarrhœa in Hanley, Wigan, and Blackburn. The mortality from "fever" showed no marked excess in any of the large towns. No death from small-pox was registered either in London or in any of the large provincial towns. The number of small-pox cases remaining under treatment in the Metropolitan Asylums Hospitals, which had been nine, nine, and seven at the end of the three preceding weeks, had further fallen to six at the end of last week; one new case was admitted during the week, against one, three, and three in the three preceding weeks. The number of scarlet fever cases in these hospitals and in the London Fever Hospital on Saturday, June 24th, was 2427, against 2268, 2285, and 2356 on the three preceding Saturdays; 325 new cases were admitted during the week, against 351, 289, and 292 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory organs, which had been 235, 191, and 189 in the three preceding weeks, further declined to 144 last week, but were three above the number in the corresponding period of last year. The causes of 55, or 1·4 per cent., of the deaths in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Portsmouth, Bristol, Leicester, Salford, Bradford, Leeds, and in 41 other smaller towns; the largest proportions of uncertified deaths were registered in Birmingham, Liverpool, Blackburn, Preston, Barrow-in-Furness, Sheffield, Sunderland, Gateshead, and Newcastle-on-Tyne.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 16·9, 16·4, and 15·7 per 1000 in the three preceding weeks, further declined to 15·1 per 1000 during the week ending June 24th, but was 2·1 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 9·6 in Leith and 11·8 in Aberdeen to 16·8 in Perth and 18·6 in Greenock. The 508 deaths in these towns included 18 which were referred to measles, 18 to whooping-cough, 15 to diarrhœa, four to diphtheria, three to "fever," and two to scarlet fever, but not any to small-pox. In all 60 deaths resulted from these principal infectious diseases last week, against 80, 62, and 74 in the three preceding weeks. These 60 deaths were equal to an annual rate of 1·8 per 1000, which was 0·6 per 1000 above the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of measles, which had been 33, 17, and 26 in the three preceding weeks, declined again last week to 18, of which 12 occurred in Glasgow, four in Edinburgh, and two in Perth. The deaths from whooping-cough, which had been 24, 23, and 29 in the three preceding weeks, decreased to 18 last week, and included 11 in Glasgow, three in Edinburgh, and three in Dundee. The fatal cases of diarrhœa, which had been 16, 14, and 15 in the three preceding weeks, were again 15 last week, and included eight in Glasgow, three in Edinburgh, and three in Aberdeen. The deaths from diphtheria, which had been one, four, and one in the three preceding weeks, rose again last week to four, of which two occurred in Glasgow. The fatal cases of "fever," which had been three, three, and two in the three preceding weeks, rose again to three last week and included two, one being a case of typhus, in Greenock. The deaths referred to diseases of the respiratory organs in these towns, which had been 88, 89, and 63 in the three preceding weeks, rose again last week to 74, and were 10 in excess of the number in the corresponding period of last year. The causes of 22, or more than 4 per cent., of the deaths registered in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 19·4, 19·3, and 17·2 per 1000 in the three preceding weeks, rose again to 17·9 per 1000 during the week ending June 24th. During the past four weeks the death-rate has averaged 18·5 per 1000, the rates during the same period being 13·4 in London and 15·9 in Edinburgh. The 130 deaths of persons belonging to Dublin registered during the week under notice were five in excess of the number in the preceding week and included six which were referred to the principal infectious diseases, against eight, five, and three in the three preceding weeks; of these, two resulted from measles, two from diarrhœa, one from diphtheria, and one from "fever," but not any from small-pox, scarlet fever, or whooping-cough. These six deaths were equal to an annual rate of 0·8 per 1000, the death-rates last week from the principal infectious diseases being 1·2 in London and 1·7 in Edinburgh. The 130 deaths in Dublin last week included 21 of children under one year of age and 37 of persons aged 60 years and upwards; the deaths both of infants and of elderly persons were considerably in excess of the respective numbers recorded in the preceding week. Six inquest cases and four deaths from violence were registered; and 52, or two-fifths, of the deaths occurred in public institutions. The causes of six, or nearly 5 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Surgeons: D. D. Turner to the *Pembroke* for disposal; A. C. Bean to the *Egmont* for the *Maine;* and P. T. Nicholls to the *Thetis*.

ARMY MEDICAL STAFF.

Surgeon-General W. F. Burnett is placed on retired pay (dated June 21st, 1905).

ROYAL ARMY MEDICAL CORPS.

The undermentioned Majors are placed on retired pay (dated May 30th, 1905): Arthur O. Fitzgerald, Frederick D. Elderton, and Robert I. Power.

INDIAN MEDICAL SERVICE.

The undermentioned Lieutenant-Colonels to be Colonels: Roderick Macrae (dated Feb. 12th, 1905) and Robert D. Murray (dated March 29th, 1905).

[1] The Editor states in a leading article in the same issue of THE LANCET that he has purposely selected the reports of the speeches from the daily press and that Mr. Warburton's speech is taken from the *Chronicle* and Mr. Peel's from the *Times*. The speeches by Mr. (Sir Robert in May, 1830) Peel, ex-Home Secretary, and by Mr. W. Smith and Sir Joseph Yorke have not been transcribed. The report concludes as follows: "After a few words from Lord Binning, Mr. H. Gurney, Mr. Maberly, Mr. Secretary Bourne, and Mr. Warburton, the motion was put and agreed to."

ARMY MEDICAL RESERVE OF OFFICERS.

Lieutenant J. S. Warrack, Royal Army Medical Corps (Volunteers), to be Surgeon-Lieutenant (dated June 24th, 1905). Surgeon-Major E. T. Crouch to be Surgeon-Lieutenant-Colonel (dated June 20th, 1905). Surgeon-Captain H. Dickie to be Surgeon-Major (dated June 17th, 1905).

ROYAL ARMY MEDICAL CORPS (MILITIA).

Welsh and Midland Command: Lichfield Company: Lieutenant (Honorary Lieutenant in the Army) H. J. L. Ballen to be Captain (dated Feb. 26th, 1905). Irish Command: No. 3 Belfast Company: The promotion to the rank of Captain of Lieutenant (Honorary Lieutenant in the Army) S. T. Beggs bears date June 19th, 1904.

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers): 1st Suffolk and Harwich: Surgeon-Captain T. E. Stuart to be Surgeon-Major (dated Nov. 26th, 1904). 2nd East Riding of Yorkshire: Surgeon-Captain J. Soutter to be Surgeon-Major (dated June 24th, 1905).

Rifle: 1st Volunteer Battalion the East Yorkshire Regiment: Surgeon-Captain H. G. Falkner is borne as Supernumerary whilst attached to the Yorkshire Volunteer Infantry Brigade Bearer Company (dated June 24th, 1905). 1st Lanarkshire: Surgeon-Captain J. G. Andrew resigns his commission (dated June 24th, 1905). 1st Volunteer Battalion the King's (Shropshire Light Infantry): Surgeon-Major W. H. Packer is granted the honorary rank of Surgeon-Lieutenant-Colonel (dated June 24th, 1905). 17th (North) Middlesex: Surgeon-Lieutenant F. H. Gervis to be Surgeon-Captain (dated June 24th, 1905).

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

Northern Command: Manchester Companies: Lieutenant-Colonel W. Coates is granted the honorary rank of Colonel (dated June 7th, 1905). Eastern Command: Maidstone Companies: Lieutenant J. M. Rogers-Tillstone to be Captain (dated April 12th, 1905). Scottish Command: Aberdeen Companies: Surgeon-Lieutenant P. Mitchell, from the 5th (Deeside Highland) Volunteer Battalion the Gordon Highlanders, to be Lieutenant (dated June 10th, 1905). Scottish Command: Glasgow Companies: Lieutenant (Surgeon-Lieutenant, Army Medical Reserve of Officers) J. T. K. Thomson resigns his commission (dated June 10th, 1905). South Wales Border Bearer Company: Thomas Donovan to be Lieutenant (dated June 12th, 1905).

THE INDIAN ARMY COMMAND.

As our "service" readers are aware a serious official conflict of opinion has of late been taking place between the Viceroy of India and General Sir E. Elles, the military member of Council, on the one part and Lord Kitchener on the other with the result that a great and radical change is about to be carried out in our Indian military system. Substantially it is that proposed by Lord Kitchener and among other things it may possibly affect the position, although, as it appears to us, only nominally, of the Indian Medical Service. The Commander-in-Chief in India is henceforth to be recognised as the one military adviser of the Indian Government and is to be directly responsible for everything connected with war and the preparation for it. The Military Department, on the other hand, will be limited to the control of contracts and purchases, and the management of military works and of the increasing manufacturing departments, with charge of the Indian Medical Service and the Indian Marine. The business function of supplying the army with necessaries is henceforth to be kept altogether distinct from the military function of command.

THE ROYAL NAVAL HOSPITAL, STONEHOUSE.

A number of members of the St. John Ambulance Association at Bolton, who have engaged to serve with the sick berth staff of the Royal Navy in the event of war, are undergoing a week's training at the Royal Naval Hospital, Stonehouse (Plymouth).

DEATHS IN THE SERVICES.

Surgeon-General James Macnabb Cuningham, C.S.I., I.M.S., Bengal (retired), Honorary Surgeon to the King, on June 27th.

Inspector-General of Hospitals and Fleets Alexander Turnbull, R.N. (retired), on June 22nd, aged 67.

THE WAR IN THE FAR EAST.

There is no medical news connected with the war to be recorded this week. According to a Washington telegram the peace plenipotentiaries of the Japanese and Russian Governments will meet early in August but no action has yet been taken in regard to an armistice.

The *Maine* hospital ship arrived at Plymouth on June 23rd with invalids from the Mediterranean station. 20 medical and 13 surgical cases, together with one lunatic, were taken to the Royal Naval Hospital, Stonehouse.

The Army Council has decided that from July 1st all Staff and departmental officers serving at home and abroad (except India) shall, in common with regimental officers, have the option of drawing their pay either through the agents or through the local accountant or paymaster.

Correspondence.

"Audi alteram partem."

THE ROYAL MEDICAL AND CHIRURGICAL SOCIETY: THE PRESIDENTS' PORTRAITS.

To the Editors of THE LANCET.

SIRS,—I am anxious, if possible, to complete our collection of portraits of past Presidents and should be very grateful to anyone who would put me in the way of making good our deficiencies. I subjoin a list of those Presidents of whom either we have no portraits or only very poor ones. While, of course, I should be glad to receive, and would gratefully acknowledge, gifts, I am quite willing to pay a fair price for any good portraits that may be offered to me.

I am, Sirs, yours faithfully,
J. Y. W. MACALISTER.

20, Hanover-square, W., June 23rd, 1905.

Portraits Wanted by the Royal Medical and Chirurgical Society.

President in—		
1813	...	Sir Gilbert Blane.
1815	...	Henry Cline.
1841	...	Robert Williams.
1843	...	Edward Stanley.
1856	...	Cæsar Henry Hawkins.
1857	...	Sir Charles Locock, Bart.
1865	...	Sir James Alderson, M.D.
1867	...	Samuel Solly.

President in—		
1869	...	Sir George Burrows, Bart., M.D.
1871	...	Thomas Blizard Curling.
1877	...	Charles West, M.D.
1879	...	John Eric Erichsen.
1881	...	Andrew Whyte Barclay, M.D.
1882	...	John Marshall.
1886	...	George David Pollock.

"TRANSCENDENTAL MEDICINE."

To the Editors of THE LANCET.

SIRS,—"Cheops, M.B.," in his letter under this cryptic title raises questions of great interest for the general practitioner. There is truth in his contention that we are apt to miss much of present-day thought by devoting a too-concentrated attention to our own voluminous and intricate subject. To a certain extent this state of matters is largely inevitable, but that it should make us intolerant and narrow in our outlook should not follow. That this danger threatens has been made clear by your correspondent. Are we not apt to be too sectarian and to look with Philistine eyes upon those within and those without our cloisters who have been so unorthodox as to cross the borderland and wander in uncovenanted byways? In the empire of the intellect there is no place for the "Little Englander," and it were a pity if such a spirit found disciples within our ranks. Have we at all times extended to the stranger within our gates that intellectual hospitality which it is ours as a learned profession to proffer? While "Cheops, M.B.," hints that we have not always done so, other thinkers not of our craft are quite sure about this point. They complain, to take an instance, of our impatience with any non-physiological explanation of psychical phenomena.

Your correspondent makes mention of Professor James's Gifford lectures. In his eulogy of them I heartily concur. Professor James in his own breezy way hits off the situation thus: "We are all familiar in a general way with this method of discrediting states of mind for which we have an antipathy. We all use it to some degree in criticising persons whose states of mind we regard as over-strained. But when other people criticise our own

more exalted soul-flights by calling them 'nothing but' expressions of our organic disposition we feel outraged and hurt for we know that whatever be our organism's peculiarities our mental states have their substantive value as revelations of the living truth, and we wish that all this medical materialism could be made to hold its tongue." "Medical materialism," continues Professor James, "finishes up Saint Paul by calling his vision on the road to Damascus a discharging lesion of the occipital cortex, he being an epileptic. It snuffs out Saint Teresa as an hysteric, Saint Francis of Assisi as an hereditary degenerate. George Fox's discontent with the shams of his age and his pining for spiritual veracity it treats as a symptom of a disordered colon. Carlyle's organ-tones of misery it accounts for by a gastro-duodenal catarrh. And medical materialism then thinks that the spiritual authority of all such personages is successfully undermined." Many of us must feel grateful to "Cheops, M.B.," for the warning he has sounded. We shall be aided in our endeavour "to sometimes take a glance at the country round about" by a more diligent perusal of THE LANCET where this very grace of intellectual hospitality abounds.

I am, Sirs, yours faithfully,

June 19th, 1905. W. E. HENDERSON.

THE TREATMENT OF RINGWORM OF THE SCALP BY THE X RAYS.

To the Editors of THE LANCET.

SIRS,—I have read with much interest Dr. H. G. Adamson's article on this subject in THE LANCET of June 24th and I should be glad if he would give us the benefit of his experience with regard to the liability to burn in different individuals. I have lately had three very instructive cases, all treated at the same time, with the same current, and the same tube. Case 1.—A lady, aged 96 years, with malignant ulceration had one exposure of 13 minutes. She was unable to come again but eight days after showed definite signs of a burn. Case 2.—A lady with lupus of the nose had seven exposures of 12 minutes. On the fifteenth day from the first exposure she showed definite signs of burning which increased for several days. Case 3.—A lady with a small rodent ulcer has had 12 exposures of 12 minutes and shows absolutely no signs of any burns. Will Dr. Adamson kindly say where Sabouraud's pastilles can be obtained?

I am, Sirs, yours faithfully,

WINWOOD SMITH.

Cockington, Torquay, June 26th, 1905.

DUST-BORNE TYPHOID FEVER.

To the Editors of THE LANCET.

SIRS,—The epidemic of typhoid fever at Bridgend is of special interest from the fact that the medical officer of health attributes it to the blowing about of infected particles in dust. Can any of your readers refer me to other recorded instances of dust-borne typhoid outbreaks?

I am, Sirs, yours faithfully,

Hereford, June 13th, 1905. HERBERT JONES.

THE NEW COUNTY HISTORY OF NORTHUMBERLAND.

To the Editors of THE LANCET.

SIRS,—On behalf of ourselves and a considerable number of other medical men assembled at a meeting called for the purpose of considering the following matter, we wish, if you will allow us, to bring it in your pages before our professional brethren in order to elicit as far as practicable their collective opinion about it—viz., whether it is correct ethics or otherwise for medical men to allow their names with personal histories or biographies and photographs, all furnished by themselves, to be published in a work now being brought out which purports to be a county history of Northumberland at the opening of this century, with contemporary biographies and which is advertised by its publishers as "A Romance of Commercial Enterprise and Business Ability"?

We may say, as throwing some light upon the methods adopted in bringing out this publication, that some of us have been given to understand by the agent of the publishers, when he called, that our names, &c., would only be admitted to its pages if we were willing to subscribe for a copy of it at £5 5*s.*, although this, when mentioned to the publisher himself, who has come north to further the enterprise, has been stated by him not to be correct; however, the fact remains that when several of us as a test question asked his local agent whether our names, biographies, and photographs would be inserted if we did not subscribe for copies, we were told that it was purely a business transaction and that they would not be inserted on other conditions, with the result that the agent withdrew when this was not agreed to. We also have been told that the selection of those who are considered to be "men of standing" sufficient for this publication is made according to the advice of some "local man" who is therefore the arbiter to say who is eminent enough to have his personal biography and photograph admitted to the pages of this so-called "County History."

To the plain man this enterprise will, we think, appear to be only a form of self-advertisement for which many, if not all, would have to pay in the way above indicated in order to be included. We recognise, of course, that numerous eminent public men are included in these volumes (for other counties also have been dealt with) but as much of the history of such men is public property it is difficult to see how they could be kept out even if it were desirable, which we do not assert. We cannot for our part distinguish between the supplying of professional details by professional men in order that they may be published in a book of this kind and any other advertisement for which one would have to pay, if such a thing were not forbidden up to the present time by what we have always understood to be the canons that govern the conduct of all members of the learned professions of this country.

We are, Sirs, yours faithfully,

R. S. PEART, Chairman.

LACHLAN FRASER, Honorary Secretary.

North Shields, June 20th, 1905.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

To the Editors of THE LANCET.

SIRS,—Will you kindly extend to me the hospitality of your columns in order to notify all diplomates of the Edinburgh Colleges that a petition will shortly be sent round for signature praying for the addition of a Membership to the existing R.C.S. Ed. qualification. As the expense of the petition will necessarily be very heavy I should be glad to acknowledge any subscriptions sent by diplomates in favour of the movement.

I am, Sirs, yours faithfully,

DAVID WALSH,

Honorary Secretary of the Association of Medical Diplomates of Scotland.

18A, Hanover-street, London, W., June 27th, 1905.

WOOD *v.* BAILEY.

To the Editors of THE LANCET.

SIRS,—In your article on the above case published in THE LANCET of June 24th the following statement occurs:—

> It would, nevertheless, be satisfactory to the profession to hear from him [Dr. Cowper] that he had endeavoured to prevent a defence which he must have foreseen to be futile and that he had striven to enlighten Mr. Bailey with regard to the true nature of his position and his responsibilities.

In reply to this I may state that the first intimation I had that the above case was pending was when Mr. Bailey called on me a few days before the trial. I told him plainly that the defence was absurd and that he would certainly lose the case. I said to him: "If it were possible for you to win a case like this the practice of medicine would be impossible." I pointed out to him that we (medical men) were in the same position as other professional men and asked him if he had ever heard of a barrister being refused his fees because he had not conducted his case differently to what he had done. I told Mr. Bailey's solicitor the same thing and I further said that I declined voluntarily to go as a witness.

You state the plaintiff, Dr. Wood of Shanklin, &c. I may say Dr. Wood practises at Sandown, where the patient resides, whereas my partner and I practise in Shanklin. I may say that my partner (Dr. Hammond) gave Mr. Bailey's solicitor advice similar to that which I gave him.

I am, Sirs, yours faithfully,

Shanklin, June 28th, 1905. JOHN COWPER.

CERTIFICATION UNDER THE LUNACY ACTS.

To the Editors of THE LANCET.

SIRS,—I should be much obliged if you would kindly inform me whether, in the event of a club patient having to be sent as a pauper to an asylum, it is usual for the relieving officer to obtain the lunacy certificate from (*a*) the Poor-law medical officer or from (*b*) the medical man in attendance. I am, Sirs, yours faithfully,

June 15th, 1905. A. B. C.

*** To determine the exact procedure required in order to get an insane person who, by reason of his mental infirmity, has become chargeable to his parish or union into an asylum is a perennial source of trouble to medical men. This is a natural consequence of that difficulty in interpreting the provisions of the Lunacy Acts which results from the ambiguity of the language of those statutes. We have frequently had occasion to deal with this topic, but the above letter shows that there are still rough places to be made smooth. Our correspondent asks whether, in the event of a club patient having to be sent as a pauper to an asylum, it is usual for the relieving officer to obtain the necessary medical certificate from the Poor-law medical officer or from the medical man in attendance. The question indicates some misapprehension of the relieving officer's position. It is not the business of this officer to obtain a certificate at all. His duty under the Act of 1890, as laid down in Section 14, subsection (2), consists in giving notice to a justice having jurisdiction that there is an alleged lunatic to be dealt with. Section 16 directs the *justice* to call in a medical practitioner and no restriction is placed upon the choice which the justice may make except that Section 32 prohibits the employment of an interested person. It is, however, quite a common thing for boards of guardians to arrogate to themselves the selection of a medical man. Acting through their relieving officer they require their own medical officer to certify and make the fees which they have to pay for the certificates a part, and sometimes a considerable part, of his salary. Justices often, it would appear, through ignorance of the extent of their own powers, acquiesce in the arrangement. There is no doubt that this course is productive of much annoyance to the general practitioner, especially in the case of club patients, who are not ordinarily sources of much profit to their medical attendants, but it must be remembered that the Poor-law medical officer has also some right to be considered and that any departure from the customary routine which a justice might see fit to make would involve an already badly paid official in pecuniary loss for which the Lunacy Acts provide no compensation. —ED. L.

MEDICAL CERTIFICATES IN RESPECT OF SCHOOL ATTENDANCE.

To the Editors of THE LANCET.

SIRS,—The education committee of the Surrey county council last year introduced tentatively a scheme for the certification of absentee school children by the medical officers of health of a few of the Surrey districts. A fee of 5*s.* was paid for a visit to the home of the child. Although in some of the districts this might involve a journey of eight miles some of the members of the committee considered the fee excessive and the scheme was abandoned. The school attendance committee of the petty sessional division of Guildford then approached some of the medical men practising in one part of its district with a view to their examining children at their surgeries and giving the necessary certificate for a fee of 1*s.*, or visiting the children at their homes for a fee of 2*s.* The offer was accepted by two practitioners, although the district in question comprises some 21 square miles! The commendable action of the Sevenoaks division of the British Medical Association mentioned by Dr. O. D. Marriott in THE LANCET of June 24th might with advantage be extended to this district. I am, Sirs, yours faithfully,

X.

THE HOUSE OF LORDS COMMITTEE ON THE SANDGATE "SANATORIUMS" NUISANCE.

(BY OUR SPECIAL SANITARY COMMISSIONER.)

THE minutes of proceedings taken before the Select Committee of the House of Lords on the Sandgate Urban District Council (Sanitary Powers) Bill go far to confirm what has been said in these columns concerning the pretended out-door treatment of patients suffering from tuberculosis at the homes of the late Mr. J. J. Jones of Sandgate. The more sensational features of the case were, it is true, somewhat toned down. The fact that the author of the whole grievance is dead and that his successors seem to have endeavoured to effect improvements suffices to explain the more considerate attitude adopted. There was a very natural desire to avoid as far as possible hurting the feelings of the youthful and comparatively irresponsible successor to the management. Much trouble has recently befallen the family. The late Mr. J. J. Jones had somehow succeeded in gaining possession of 19 properties at Sandgate and some 30 houses. The son who helped him to manage this property died suddenly and in dramatic circumstances. Shortly afterwards Mr. J. J. Jones fell ill and died in March, 1904. Another son, Mr. P. H. Jones, had been sent directly from school to Paris and had been in business there for seven years. Suddenly he was called upon to give up his Paris business and to take in hand the management of the homes and properties at Sandgate. This Mr. Jones, though only 26 years old, seems to have acquired some business capacity as an administrator, but he could not have any technical knowledge as to sanatoriums or any personal knowledge of the Sandgate business. He does seem, however, to have realised that this business was not carried on in a very correct manner. Notably, he felt that the medical control was not sufficient and also that it was folly to pretend that the treatment was similar to that given at Nordrach, Davos, and Leysin. He consequently destroyed 10,000 circulars which made this assertion and which his father had printed. In these circumstances there was a general desire to deal gently with Mr. Jones, jun. Nevertheless, the main principles at issue remain unaltered and attempted reforms made to-day are no guarantee for the future. Such reforms may be due to an honourable desire to remove grievances or merely to fear engendered by the actual and very general outcry. In either case a change of management or a change of disposition may produce other alterations and there is nothing to prevent matters from becoming as bad as, or worse than, they were in the past.

As an example of such instability the late Mr. J. J. Jones wrote to me on July 21st, 1903, giving a list of five houses containing 126 beds which, he stated, were "used strictly and exclusively for phthisical patients." He also mentioned three other houses with 80 beds for children and convalescents from infirmaries. That these figures might be altered and probably increased is shown by the fact that Mr. Jones further remarks in this letter that "the numbers stated are as accurate as we can give you at the present time," and adds: "We calculate we can receive after the end of this week when the transfers have been made and the enlarged accommodation in use, about 23 more patients." Thus it seems as if the late Mr. Jones contemplated receiving 149 tuberculous patients. At that time apparently it was the policy to exaggerate rather than to minimise the number of cases of tuberculosis taken into the homes at Sandgate. The late Mr. Jones even succeeded in convincing the medical officer of health, Dr. C. E. Perry, that he had received in his homes during the year 1903 no less than 880 tuberculous patients. Now Mr. Jones, jun., appears before the House of Lords Committee and states that there are only 116 beds available for tuberculous cases and that he has looked through his father's books and can only find trace of 518 tuberculous patients as having been received in the homes

during the year 1903. The number of deaths, however, is not challenged and the fact that 43 patients died out of 518 may be considered as creating a greater danger for the surrounding population than if there had been 43 deaths among 880 patients. It shows that the patients were in a more advanced stage of the disease and therefore less suited to the sanatorium methods of treatment; at all events measures were taken to check this state of affairs, letters being written to boards of guardians complaining as to the condition of the patients whom they sent to Sandgate.

Of the various criticisms made in the original indictment published in these columns,[1] that which seems to have been most taken to heart was the denunciation of the fact that there was no medical control. Prospectuses were so worded as to infer that there was responsible medical supervision; but Dr. W. L. Chubb, whose name was mentioned in this connexion, explained to me that though he was called in to give advice to patients he was no more responsible for the condition of the homes than he would be for the drainage or the diet of an ordinary hotel where one of the visitors might fall ill and send for him. Indeed, the position was such that ultimately, and to put an end to all misunderstanding, Dr. Chubb refused to have anything more to do with the late Mr. J. J. Jones and his patients. An agreement was then drawn up, dated September, 1903, with Mr. A. J. Gore, which was produced in evidence to show that now, at least, the homes were under proper medical control. The post given to Mr. Gore is described in that document as that "of consulting and acting physician and doctor to the said Sandgate Sanatoria and Convalescent Homes aforesaid." The document specifies that "the said medical superintendent shall have the full control of all matters relating to, or in connexion with," and "shall be solely responsible for the general comfort and welfare of the said patients and for all medical attendance, prescriptions, and dietary instructions." If the matrons and nurses do not carry out the instructions given they can be dismissed by the medical superintendent. So it would seem as if something like medical control had at last been established and for this Mr. Gore was to receive a retaining fee of £104 a year and certain other fees which brought up the total to £287 last year. But it appeared in evidence that this deed was drawn up on behalf of Mr. J. J. Jones, who is dead, by his son, Mr. F. T. B. Jones, who also is dead, and is now carried out by Mr. P. H. Jones who has no legal right whatsoever in the matter. There are five members of the family who claim the estate of the late Mr. J. J. Jones. They propose to draw up a deed of partnership and they propose to appoint Mr. P. H. Jones to manage the estate, but as yet they have done nothing of the sort. Finally, instead of an estate representing a valuable property they find that there are £10,000 of debts. Then, again, even if all prospered and the agreement mentioned was renewed in a proper and legal manner it contains a clause by which it can be revoked after a three months' notice. Thus it will be seen that there is no guarantee whatsoever that proper medical control will be permanently established. Nor can it be said that the appointment of a medical man in control is a sufficient guarantee. That medical man remains the servant of an employer to whom business and not the treatment of disease is the primary object. If the medical attendant is a poor man and receives from this one source about £300 a year it puts him in a position of great dependence. It is not fair to expect anyone to be ready to give up his means of existence because his instructions are not properly carried out. It is not reasonable to expect that the medical attendant would endeavour to carry out methods of treatment involving such expense as would be almost certain to entail his dismissal. On the other side, the manager of a commercial concern whose sole aim is financial success would endeavour to find a medical man ready to assume the responsibility of control, while at the same time making that control as little expensive and irksome as possible. Evidently such matters should not be subordinated to the financial interests of either the employer or the employed. Therefore the Bill will be useful if, as proposed, it lays down a set of rules and regulations which must be carried out in sanatoriums and this independently of the opinions or desires of the owners of such establishments or of the medical attendants appointed to treat the patients. Indeed, it must also be borne in mind that outdoor treatment and sanatoriums for tuberculous patients have brought into existence a comparatively new technique that has been developed within the last few years. It therefore does not follow that any and every qualified medical practitioner knows all about this new subject.

The evidence given by some of the medical witnesses before the House of Lords Committee showed that technical knowledge of sanatoriums is not general. For instance, Mr. Gore himself stated in evidence that he had had no experience of public institutions. Some years ago and by courtesy he had attended the practice of the out-patients' department of the City of London Hospital for Diseases of the Chest, Victoria Park, but this, of course, has nothing to do with sanatoriums. In regard to the technique of sanatoriums the general rule is that there should be a classification of cases and according to Dr. Walters's and Dr. Ransome's works there should be one medical attendant for every 40 patients. The temperature of these patients should be taken three times a day and they should be carefully watched at meals. At the Jones's homes there are actually 215 beds and there is no law to prevent tuberculous patients being placed in all these beds, and in that event there is no law to compel the employment of a proportionate number of medical attendants. It was stated in evidence that it was doubtful whether more than 100 beds were occupied at any one time by tuberculous patients. Still, even this is a good deal in excess of the 40 patients which it is supposed are enough for one medical attendant. Then, as these patients are, or were, lodged in five different houses the one medical attendant cannot watch over all the meals and see that each patient gets exactly what he needs. As a matter of fact, it is, of course, preposterous to suppose that constant and personal surveillance over the meals can be exercised in such circumstances. Mr. Gore said in his evidence that he had seen the patients at all their meals and doubtless he has done so once or twice, but the conditions of the patients change from day to day and one of the advantages of a sanatorium is that day by day and hour by hour the patients are being watched by highly qualified medical men. Mr. Gore, however, has a private practice outside Sandgate, he does not even live at Sandgate; and if he did he could not reside in five different houses at one and the same time; so it results that there is no resident physician whatsoever. Yet, on the other hand, there are 100 or so patients and these are not cases in the incipient stage. The patients had in many instances reached so advanced and dangerous a stage that Mr. Gore related, in his evidence, how he had written to the boards of guardians protesting against such desperate cases being sent to Sandgate. Nevertheless, in 1904 there were 24 deaths out of a total of 441 patients who spent some part of the year at Sandgate. To be single-handed with so many patients is not in keeping with the practice of well-regulated sanatoriums. On the other hand, it is difficult to see how a commercial enterprise of this description can be made to pay if a sufficient staff of medical officers is engaged.

The financial problem becomes all the more difficult in the face of the strange evidence of Mr. Jones, jun. He declared that he had given up all intention of taking in paying patients. The late Mr. Jones declared to me that he had spent some £1500 to refurnish, to decorate, and to convert Farleigh House into a sanatorium for the reception of what he qualified as first-class paying patients. These were to pay 35*s.* a week, or 45*s.* if they had a private room. Then there were also second-class patients who paid 25*s.* a week, or 33*s.* if they had a private bedroom. Finally, there were the patients from the workhouse infirmaries and for them the board of guardians paid at the rate of £1 1*s.* per week. The 34 beds in Farleigh House, the 15 beds in Lymington House, and the 14 beds in Ontario House were all to be occupied by paying patients and the late Mr. Jones boasted that more than 2000 paying patients had availed themselves of the advantages which he offered. Now we are told that the result of this business is £10,000 of debts. Then we are told that with two exceptions all the paying patients are gone, that no effort is being made to attract others, and that the business is now limited exclusively to pauper patients who occupy even Farleigh House in spite of the £1500 recently spent in luxurious furniture and decoration. It is perhaps not surprising that paying patients should have become scarce, but the extraordinary thing is that the late Mr. Jones with his hundreds of paying patients is said to have made debts to the amount of £10,000, while the present Mr. Jones though but new to the business and dependent

[1] THE LANCET, August 22nd, 1903, p. 565.

solely on pauper patients is actually making such profits that he hopes in time to pay off his father's debts. Thus it is stated before a committee of the House of Lords that paupers for whom not more than 116 beds are now available receive proper medical attendance, sufficient milk and food of good quality, and healthy house accommodation, with no overcrowding, all for one guinea a week; and further, that out of this one guinea per head per week the margin of profit is so large that hopes are entertained of paying off an enormous debt of £10,000. Does this seem rational? And if such profits accrue what will be the fate of the patients? Is it not time that the patients should be protected by a law establishing rules for the management of sanatoriums?

That is what the Bill proposes. Such establishments must have a licence. The licence will not be given unless rules and regulations approved by the Local Government Board are applied, and therefore the owners of unsuitable private dwellings in which tuberculous patients are huddled together as if they were tenants of a common lodging-house will no longer be allowed to receive such cases. So far so good, but the Lords Committee insisted on adding a clause giving a double compensation. If a licence is refused to the owner of a house for tuberculous patients and he is not allowed to take in any more patients then he is to be compensated for the cost of structural alteration incurred in putting his house to some other purpose. As a case in point the removal of the cubicles from Grosvenor House, where the paupers are partitioned off from each other, was mentioned. Secondly, and this is a much more serious matter, the owner is to be compensated for disturbance in his business for, as it were, the loss of the "goodwill" of the business.

Before the sanitary and medical aspects of this particular Sandgate business were taken up in these columns *Truth* had been following for some ten years the career of the late J. J. Jones, denouncing his religious begging-letter impostures and demanding some control over the donations which he obtained from charitably disposed persons. By methods thus publicly challenged a nuisance has been created which has seriously injured the prosperity of Sandgate and depreciated the value of property in that town. But it is not the Jones family who are called upon to pay compensation to the town of Sandgate for the unquestioned harm they have done; it is, on the contrary, the ratepayers of Sandgate who have to compensate the Jones family if they try to do away with this mischief. This is what *Truth* qualifies as "a monstrous state of things," and it adds:—

> The Jones family have created and carried on this business under conditions which the law ought never to have tolerated. Sandgate has thereby been heavily damaged as a seaside resort; yet the noble lords constituting this Select Committee now actually insist that the unfortunate ratepayers, if they seek to interfere with the cause of the mischief shall pay compensation to the parties responsible for it! The decision virtually recognises a vested interest in a public nuisance.

The ratepayers and district council of Sandgate, instead of being mulcted in this manner, merit the gratitude and some sort of substantial support and recognition on the part of the entire United Kingdom. Great Britain in respect to sanatoriums for the treatment of tuberculosis and to laws regulating the same is much behind several continental nations. The local authorities at Sandgate at their own risk and cost have taken the first step towards obtaining for the country some sort of legislation on the subject. Of course, their Bill only affects their district but it is obvious that it will serve as an object lesson and a precedent for the rest of the country. And at present what is the lesson? First, that it is advantageous to join some religious body and under the guise of charity to obtain possession of house property and land. Then the next step is to create a nuisance on that property and to persist in the nuisance till the neighbours are compelled at any cost to abolish the nuisance. In that event there will be compensation forthcoming and thus ample means will be provided to begin the whole process over again elsewhere. If the younger generation of the Jones family had the enterprise and energy of the late J. J. Jones they would already be purchasing property at Hythe or some other similar place so as to transfer their business from Sandgate and wait there till another Bill, with the complacent aid of the Lords, gave them another claim for farther compensation.

In spite of the decision of the Lords Select Committee it is difficult to see where the claim for compensation comes in. No one proposes to confiscate any of the property belonging to the Jones family. In certain towns, notably in Ireland, the inhabitants keep pigs in their private dwellings. In England poultry is kept. Then these places grow in size and rules are enacted to the effect that pigs and poultry must not be kept in the crowded and central parts of such towns. Is compensation paid to the people who have created a nuisance with their pigs and poultry? Then again factories or mills are started. In the course of time it is found that many accidents occur and laws and regulations are enacted stipulating that machinery shall be railed off or protected by netting, &c., so as to prevent accidents. In some cases the machines were so awkwardly placed that this could not be done, so it was necessary to stop working the machines or to remove them elsewhere. In other cases expensive apparatus for better ventilation or the carrying off of dust had to be introduced. Was compensation claimed and given? The Jones family have created a new industry at Sandgate. This industry is proved to be a danger and a nuisance. The demand is that their dangerous machinery shall be fenced off; in other words, that the houses in which, for industrial or money-making purposes, they herd together tuberculous patients shall be separated from the rest of the community by a large open space. Further, the demand is that they shall not profess to give outdoor treatment when they have no outdoor space at their disposal, that they shall be made by law to act up to their professions and promises, and if they cannot do so then that they must give up the business. Where in all this lies the claim for compensation? It will be a very dangerous thing if a precedent is established giving right of compensation to all who succeed in creating some novel kind of nuisance which was not foreseen and specified by laws enacted previously to the invention or discovery of the new process giving rise to the novel means of endangering public security. What is required at Sandgate does not differ from that which already exists on the continent and it is a serious matter if we cannot bring ourselves up to the continental level without having to pay compensation to the authors of nuisances. It is a pity that more evidence was not given before the Lords Select Committee as to what is being done on the continent; the members of that committee might then have been more anxious to facilitate the acquisition in England of laws, regulations, and methods that would compare more worthily with those which exist abroad.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

University Intelligence.

THE fifth degree congregation will be held in the large lecture theatre of the Birmingham and Midland Institute on Saturday, July 8th, at noon. The vice-chancellor will confer degrees and in the afternoon the pro-vice-chancellor will give a garden party.—The council has decided to invite Sir Archibald Geikie to deliver the Huxley lecture in 1906.—The dean of the Faculty of Medicine (Professor H. G. Barling) has presented to the University a portrait in oils of Dr. John Tomlinson Ingleby, in memory of whom the Ingleby lectures and scholarships were established by his son, the Rev. Charles Ingleby.

Presentation to Dr. E. Rickards.

The retirement of Dr. Rickards from the office of honorary physician to the General Hospital has been considered by his friends and colleagues a suitable occasion to testify to the regard in which he is held and to the gratitude which they feel for his long and valued services to the charity. The presentation took the form of a grandfather's clock in carved oak and brass finishings and an illuminated address containing a record of the resolution passed by the board of management at the time of his resignation. The address was in the twelfth century style and into the various borders were introduced water-colour sketches of the old and new General Hospitals. The volume was bound in dark green morocco. An engraving of Dr. Rickards was also presented to the hospital accompanied with the request that it might be hung in the Medical Common Room as a permanent record of his faithful and valuble services. Mrs. Rickards was the recipient of a diamond necklace and a copy of the engraved portrait of her husband.

"Reformatory" Conference in Birmingham.

The triennial conference of the Reformatory and Refuge

Union and National Associations of Certified Reformatory and Industrial Schools was held in Birmingham last week. The questions discussed included: workshops and manual training in reformatory and industrial schools; work of training ships; training for army and navy bands; boys' homes and lodging houses; pension schemes for superintendents and matrons; physical training; children's police-courts; industrial training of girls; the care and training of the feeble-minded; and the hygiene of reformatory and industrial schools. Dr. C. J. Macalister of Liverpool, who read a paper on the last subject, brought forward a number of objections to the system of collective bathing. He pointed out that in public swimming baths the water removed from the skin and hair of each bather some 4,000,000,000 bacteria in ten minutes, not to speak of the more noxious organic exhalations and excretions from the skin. He suspected that certain toxic diseases were traceable to bathing in such contaminated water and advocated each bather having a warm soap bath, followed by a shower bath, before entering the swimming bath. He also emphasised the importance of more frequently changing the water of the bath than is the custom at present.

Hospital News.

The annual meetings of the friends and supporters of the Solihull and of the Hanchurch Children's Convalescent Homes have been recently held and each institution has been able to report a favourable balance on the year's work. The building of a special wing for crippled children is meditated in connexion with the Hanchurch Home.—At the last meeting of the King's Norton guardians it was decided to enlarge the infirmary by the addition of two pavilions and a nurses' home and by the extension of the isolation hospital.—For the thirty-third successive year an appeal has been made to the working men and women of Birmingham for contributions in aid of the Hospital Saturday Fund. The total amount raised during the last 32 years is £316,111 and last year the sum subscribed was £18,643. As I mentioned in a previous letter the committee is anxious this year to obtain £20,000 and at the present time it has received £16,363 6*s.* 4*d.* towards that amount. Confidence is felt that at the close of the list the amount subscribed will not be far short of the sum desired.—The Bingley Hall Arts and Industries Exhibition, which was promoted by the committee of the hospital fund in order to meet the expenditure incurred by the rebuilding of Marle Hall Convalescent Home, is now closed and after paying all expenses it is hoped that £2000 will be available for the purpose.

The Warley Woods.

With the view of stirring up enthusiasm in the minds of the Birmingham public over the proposed purchase of Warley Woods and the extension of Lightwoods Park the woods were thrown open on June 17th. Music was provided and a large concourse of people availed themselves of the opportunity for inspecting the site. An informal meeting was held and several gentlemen connected with the local authorities interested in the scheme were present and addressed the meeting. A more formal meeting is to be held shortly at which the chief speakers will be the Bishop of Birmingham and Sir Oliver Lodge.

Birmingham Board of Guardians.

Owing to the gradual increase of the aged poor in the Birmingham workhouse the guardians have decided to remove all the children, thereby allowing greater accommodation for the adults. The children will be boarded out in homes and will thus be brought up amid pleasanter surroundings. A discussion *re* the formation of a labour colony for able-bodied paupers was adjourned until the next meeting.

The Health of the City.

The health of the city has continued good—last week the death-rate was 12·9, the lowest since July, 1903—with the exception that there has been a return of small-pox. There are now 12 patients suffering from this disease in the isolation hospital. The disease is of a mild nature and one man who had had it for three weeks had continued at his work and spread the disease to six others. It is anticipated that there will probably be other cases due to this unrecognised attack.

June 29th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The Treatment of Epilepsy: A Year's Work at the Maghull Home for Epileptics.

THE annual meeting in connexion with this institution was held on June 17th at Maghull, when a number of visitors were afforded an opportunity of acquainting themselves with the work being carried on there for the treatment of epilepsy. The report stated that so far as regarded the number of patients there had been little change. The applications for admission to the second and third classes still kept in advance of the accommodation, which the committee had not seen its way to extend. Farming operations were not so successful as last year, the net result being a loss of £61 13*s.* A few of the patients on the farm had so improved that they had left the home to take up employment in gardens. Patients' payments amounted to £153 7*s.* 11*d.*, exclusive of wages paid to patients who were cooks. The day school provided for the education of the children and backward youths to the number of 17. The continuation classes for adults met twice a week during the winter and trained 122 students, of whom 112 qualified for the grant. The medical report stated that at the beginning of the year there were 209 patients in the home and at the end of the year 203. Four patients died during the year, three males and one female. Two of the deaths had no connexion with epilepsy. The general health of the patients was in other respects very good during the year and the home was free from any epidemic or contagious disease. In no part of the home had improvement been so marked as in the first-class patients and in regard to the other classes there were several striking successes. The gradual diminution of attacks year after year and the preservation of the mental and physical well-being formed the primary object, the reduction of "fits" being secondary and following the improvement in the general conditions. The chairman remarked that the treatment in that institution was much wider and more beneficial than in the old hospitals and, as a Liverpool man, he was proud that his city was the pioneer of homes for epileptics and it was very pleasing to know that the neighbouring city of Manchester had also a very fine institution for the treatment of the disease. Sir Edward Russell, in commending the usefulness of the institution, said that he was glad to think that in that establishment they had a routine and a daily life which must inspire the medical mind to a degree of investigation which they might well hope would be rewarded by great discoveries in the treatment of epilepsy. He noticed in the report a statement which, he thought, had in it great truth and wisdom: that it was rather a mistake for people who had epileptics in their family to attempt to treat them in a private manner, inasmuch as habits were engendered by indulgence which neither tended to cure nor to improve their subsequent life.

A Record Low Death-rate in Liverpool.

At the weekly meeting of the health committee, held on June 22nd, the medical officer of health (Dr. E. W. Hope) reported that the low death-rate of the previous week (14·5 per 1000) had further fallen last week to 14·3 per 1000. There were 202 deaths during the week, of which 61, or nearly one-third, were those of infants under one year; while the deaths of children below five years of age were 97, or almost half of the total number. Only four children between the ages of five and 15 had died during the week. These figures are a clear indication of the strenuous efforts made by the health authorities in the direction of the preservation of the health of the inhabitants of the city. The births registered in the city during the same period were 384, being equal to a birth-rate of 27·3 per 1000 of the inhabitants.

The Extension of the Liverpool Medical Institution.

A special meeting of the members of the Liverpool Medical Institution was held on June 8th to take into consideration the amended recommendations of the council for the extension and refurnishing of the building. These will involve an expenditure of nearly £3000. The alterations have become absolutely necessary owing to the requirements of the corporation on the recent renewal of the lease at a nominal sum. It is proposed to enlarge the council room

and to provide recesses in connexion with the library. Increased space will be provided for storing books and also for a pathological room and patients' waiting rooms. The resident librarian's house which adjoins will be absorbed in the building, thereby allowing for a large increase of space which is necessary for the comfort of members.

The Liverpool Royal Infirmary.

Mr. Charles Thurstan Holland has been appointed medical officer in charge of the electrical department of the Royal Infirmary. Mr. Thurstan Holland is the president of the Röntgen Society, London.

June 27th.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

Non-notification of Small-pox at Accrington.

A WEEK or two ago it was mentioned that proceedings were to be taken by the Accrington corporation against a medical man and an ex-town councillor for the non-notification of small-pox, from which disease children of the latter were suffering. At first one of the cases was mistaken for chicken-pox but "further developments of the disorder" led to communication with the medical officer of the corporation by telephone—which, it is stated, is not a legal notification—asking him to call at the house and to see the patients. As a result of this all the affected members of the family were taken to the hospital and the others were isolated. The health committee had the medical man before it and passed a resolution that the head of the family—not of the medical man's family—should be admonished for "regrettable neglect." Next, when the town council met an antivaccinationist member asserted that the patients taken to the small-pox hospital had not got small-pox. To uphold the authority of the council and its medical officer it was determined to prosecute the medical man and the others implicated and to sue the head of the family for the recovery of the cost of treatment at the hospital. However, "all's well that ends well." The medical man has written to the town clerk a letter for submission to the council admitting that he must have made a mistake, which has been accepted as a satisfactory vindication of the authority of the medical officer and of the action of the health committee, and all the contemplated prosecutions are to be dropped, "it being considered that sufficient publicity has been given to the requirements of the statute." Best of all, the borough is now said to be free from small-pox. Preston, however, which only got rid of the disease a few months since, is now again threatened with a serious outbreak, 16 cases being in hospital a fortnight ago. A further increase has taken place since then, making the number of recent cases about 34, and on June 23rd 21 cases—five men and 16 women—were still in hospital. The medical officer of health says there is no reason to attribute this fresh outbreak to certain "show" people, as had been rumoured. He adds, however, the somewhat uncomfortable remark that it is very likely due in a great measure "to the contact of the healthy with the infected in streets, railway carriages, and elsewhere during the holiday season." There is no doubt that the early diagnosis of small-pox from chicken-pox is sometimes far from easy but the "shottiness" of the former eruption rarely fails to afford help. Still mistakes occur and at Todmorden a tradesman threatens an action for compensation because his daughter has been taken to hospital as suffering from small-pox, while he contends that she only had a serious attack of chicken-pox.

Births and Deaths in Cheshire.

In his annual report to the Cheshire county council Mr. F. Vacher gives some interesting facts. Of the municipal boroughs Macclesfield had the lowest birth rate (22·6 per 1000) and the highest death-rate (20·4 per 1000), while Crewe, which is the largest municipal borough in the county, had the highest birth-rate (30·9 per 1000) and the lowest death-rate (14·6 per 1000). In the other urban districts Hoole, near Chester, had the highest birth-rate (38·6 per 1000), while its death-rate was 20 per 1000. The causes of these differences are not self-evident. Crewe is a busy town of railway workers, on a flat plain, pretty well provided with clay. Macclesfield is hilly and situated where the plain rises to the almost mountainous division between Cheshire and Derbyshire, while Hoole again is on the plain and has a good proportion of well-to-do people. But the statisticians say that the birth-rate among this class of people tends to fall. The population of the county is now estimated at 609,316, the county area being 644,180 acres, giving a little over an acre to each person.

June 27th.

NORTHERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENT.)

New Appointments at the Royal Infirmary, Newcastle-upon-Tyne.

UP to the present time the assistants in the special departments of the Royal Infirmary, Newcastle-upon-Tyne, have either been senior students or qualified men who were willing to devote their time to the work without official recognition. It has now been decided by the infirmary committee that these appointments shall only be held by fully qualified men who are engaged in the practice of the specialty of the department with which they are associated. For some years the committee has unofficially recognised the *locus standi* of the gentlemen who have been assisting in the throat and skin departments by allowing their names to appear in the annual reports of the two departments as having given valuable assistance. This has placed certain members of the committee in rather an awkward position with regard to the throat department where there were several candidates for an appointment, because they naturally felt that they were bound to support the gentleman who for so long had been unofficially connected with the department. This really made little difference in the present instance, for Dr. S. S. Whillis, who secured the position, was in any case a very popular candidate, but it shows the difficulty in which a committee may be placed by unofficially recognising the services of gentlemen who are allowed to work in any department of a hospital without being properly appointed. Dr. D. W. Patterson was appointed assistant to the skin department, there being no opposition.

Medical Association for Haltwhistle.

This is a movement which is just in its infancy at Haltwhistle for it was only on June 17th that steps were taken to form a committee to discuss the rules and regulations and accordingly a president, treasurer, and secretary were appointed.

Memorial to the late Dr. James Murphy.

A movement has been already started in Sunderland to raise a sum of money to provide a memorial to the late Dr. James Murphy. It is suggested that an ambulance should be procured for the town and that any surplus should be used for some form of memorial more conspicuous. A vacancy which his death has caused in the surgical staff of the Sunderland Infirmary has been filled by the appointment of Dr. William Robinson. For several years Dr. Robinson has been physician to the infirmary and by his transference to the surgical side a vacancy has been created for which there are already several candidates in the field.

The Prevention of Consumption.

The annual meeting of the local branch of the Association for the Prevention of Consumption and other Forms of Tuberculosis was held on June 19th in the College of Medicine, Newcastle-upon-Tyne. Lord Armstrong presided and there was a fairly representative gathering. The secretary (Dr. O. W. Ogden) was able to state that the erection of the sanatorium at Barrasford-on-Tyne was progressing steadily and if only the necessary funds were forthcoming the building, with accommodation for 50 patients, would be ready by the end of the year. To make this possible it would be necessary to raise £7000 without delay. After the business part of the meeting Sir Isambard Owen delivered an address, in the course of which he pointed out that the question of establishing a sanatorium for consumption was not a matter of charity but a matter of sound public economy. On the motion of the chairman the name of Sir Isambard Owen was added to the list of vice-presidents.

Newcastle Throat and Ear Hospital.

The twenty-seventh annual meeting of the supporters of this hospital was held on June 19th and immediately

afterwards the new premises in Rye Hill were declared open by Lord Armstrong. The house which has been acquired for the hospital has been for years the residence of successive vicars of Newcastle. The accommodation includes two wards, one for each sex, with five beds in each, as well as spacious consulting and waiting rooms and an operating theatre. Last year 2364 new patients were treated and of these 1717 contributed £373 to the funds, a fact which has been favourably commented upon more than once by the supporters of the institution. There is at present a deficiency of £2400 on the new premises fund account, only £600 having been subscribed so far. Professor Sir George Harry Philipson and Professor Frederick Page were elected honorary consulting physician and surgeon respectively and Dr. R. S. Hindmarch was appointed honorary anæsthetist.

June 26th.

WALES AND WESTERN COUNTIES NOTES

(FROM OUR OWN CORRESPONDENTS.)

Medical Fees under the Midwives Act.

IT has long been felt that some provision should have been made in the Midwives Act for the payment of a medical man who is called in by a midwife in those cases where she herself is not permitted to act alone. The Cardiff Medical Society and the Cardiff division of the British Medical Association have both discussed the question and the opinion has been generally expressed that the supervising authority should pay a fee to the practitioner who is called in upon such occasions. In Cardiff the supervising authority is the health committee of the corporation and the medical officer of health (Dr. E. Walford) is intrusted with the administration of the Act. After conferring with the medical men in the town the authority has decided to recommend to the corporation that a fee of one guinea should be paid to a medical practitioner called in by a midwife if he is unable to obtain payment from the patient or from the board of guardians. The payment is only to be made, however, in cases of flooding, convulsions, and rupture of the uterus.

The Medical Officer of Health of Chipping Sodbury.

The circumstances attending the secession of Chipping Sodbury from the combination of districts for which Dr. F. T. Bond has been medical officer of health during the past 32 years have already been referred to in THE LANCET. The Chipping Sodbury rural district council having elected as medical officer of health a local practitioner it was necessary to obtain the sanction of the Local Government Board to his appointment in order to obtain from the county council funds a moiety of his salary. The Board withheld this sanction until a meeting had been held of representatives of the councils constituting the combination. This meeting was held on June 19th, when delegates from all the constituent councils attended with the exception of the Chipping Sodbury council, a formal resolution refusing to be represented having been passed by that council. Two resolutions were passed at the delegates' meeting, one regretting that the Chipping Sodbury council contemplated withdrawing from the combination and urging in the most friendly spirit a reconsideration of the matter. The other resolution expressed the opinion that no evidence had been submitted to justify any alteration in the arrangements hitherto existing for the maintenance of the combination and that it would be to the advantage of the districts forming the combination that it should be continued on the same conditions as heretofore. The Local Government Board has now, therefore, a formal representation as required by Section 286 of the Public Health Act and can make an order for the compulsory combination of the districts concerned, but it is to be hoped that wiser counsels will prevail with the members of the Chipping Sodbury council and that they will follow the advice of their neighbours and reconsider the matter.

Typhoid Fever at Bridgend.

During the week ending June 17th there were 19 cases of typhoid fever notified in Bridgend and in the previous week there were 13, making a total of 65 cases since the beginning of the outbreak in the third week of May. Four of the cases have ended fatally. The district council has asked the Local Government Board to send a medical inspector to investigate the cause of the epidemic.

The Sale of a Medical Practice in Bideford.

At the Newcastle bankruptcy court on June 22nd his honour Judge Greenwell granted an application made by Dr. Alexander Lane of Newcastle for his discharge from bankruptcy. The applicant became a bankrupt as the result of an action brought against him at the Devon assizes last February by Mr. Ellis Pearson of Bideford, which case was reported in THE LANCET of Feb. 18th, p. 465. His honour remarked that he could not help thinking that the legal action over the sale of the practice should never have been brought and that the verdict was wrong, and as that action had brought about the debtor's bankruptcy and as the petitioning creditor (Mr. Pearson) was the person who was responsible for the proceedings, he thought he was justified in saying that the bankruptcy was brought about in the terms of the section by a misfortune which it was not in the power of the debtor to avoid and therefore he gave him his discharge at once.

June 26th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

University Reform.

FOR some time a scheme has been on foot to institute in the Scottish universities a three-term session instead of the present winter and summer sessions. During the early part of last century the old arrangement of winter and summer sessions was no doubt an advantage to the student. All courses of lectures which were essential to graduation could be taken out during the winter, while the summer session was devoted more especially to tutorial classes and more advanced lectures intended for those who were aiming at an "honours" degree. The advantage of this arrangement was considerable when one recollects that the average Scotch student was by no means wealthy and that it was in many cases only with the greatest difficulty that he could raise the money necessary for his fees. Under the old arrangement he was free during the summer months and it was the common practice for students, by teaching or otherwise, to make enough money during these months to carry them through the ensuing winter months at the University. It was only by resorting to this plan that men like William Cullen and William Hunter were enabled to complete their education. But nowadays the condition of affairs is completely altered. So many subjects need to be taught that the summer as well as the winter months are required by the university teachers to enable them to cover all the work. On the other hand, the student of the present day can better afford to pay the fees and even if he cannot assistance can be obtained from the Carnegie Fund. The Scottish universities have determined that the time has come to make some alteration and a meeting of delegates from the four universities recently took place in Glasgow to consider the question of the proposed three-term session in place of the present winter and summer sessions. The meeting was held in private but it is understood that the opinion was decidedly in favour of the proposed change. Before the alterations can be carried out a good many difficulties will have to be overcome owing to the cumbrous machinery which needs to be set in motion before any such reform can be effected, but no doubt the matter will be pushed forward as rapidly as possible. Students of the arts curriculum will probably benefit most by the new arrangement. In medicine it will make but little practical difference, for, owing to the multiplication of subjects and the necessity for holding practical and laboratory courses, the summer months have already come to be considered by the student as important a part of the university year as the winter months.

Tramcar Life-guards.

The tramways committee in Glasgow has been experimenting with various kinds of life-guards with a view to find if any improvements can be made on the one which is attached to the cars at present. Extensive experiments were made with the guard which has been adopted in Dundee on the strong recommendation of the Board of Trade. The committee came to the conclusion that the one at present in use in Glasgow is the best and by corresponding with the various municipalities it has ascertained that this same guard has been fitted on to 90 per cent. of the cars at

present running in Great Britain. In the course of discussion in the town council on the subject it was stated that during a period of three and a half years in Dundee 21 persons had fallen under the platform of the cars without any fatality occurring, while in Glasgow during the same period several fatalities had occurred. Unfortunately, since that statement was made Dundee's good record has been broken, as within the last few days a little girl in that city was knocked down and killed by having her neck caught between the cow-catcher and the ground. The larger number of fatalities in Glasgow can be understood when one considers the enormous development of the tramcar system in Glasgow. During the last 12 months 195,767,519 passengers were carried and the total mileage was 17,943,595. There is no doubt that the number of accidents has diminished since the first year or two after the introduction of electric cars and this can be attributed to the cultivation of the "car traffic sense" in the public and also to the increased expertness of the drivers. Although accidents will always occur it is possible that with an improved life-guard none of them need be fatal.

Greenock Vaccination Statistics.

The vaccination statistics for Greenock during 1904 should prove a somewhat indigestible morsel for the antivaccinationist to swallow. During the recent epidemic from figures at disposal it is shown that of 1000 persons in Greenock last year with good marks of early vaccination 3·4 took small-pox, while of 1000 with no marks or imperfect marks 19·6 took small-pox, or nearly six times as many. Again, 13·9 per cent. of successfully vaccinated persons took the disease in a severe form, while 62 per cent. of those with no marks suffered severely. Of 215 cases with good marks of early vaccination only four died, two of these from complications and of 50 persons with no marks 12 died, all from small-pox.

Peterhead New Fever Hospital.

On June 17th the foundation stone of the new infectious diseases hospital for the burgh of Peterhead was laid, with full Masonic honours, by Provost Leask. The hospital, which is situated on the north side of the town, beyond the fishing village of Buchanhaven, is being built after plans by the burgh surveyor. It is of the villa type, built in four blocks, including administrative and observation blocks, and will contain 16 beds. A small cottage hospital with two or three beds has served the necessities of the burgh for the last 20 years or more. The local authority, owing to the pressure put upon it by the Local Government Board, has, however, been compelled to make better provision in case of possible contingencies; and with a bequest of £1500 from the late Miss Hector, Prince-street, it has been able to put up a place that will not only meet the requirements of the town but will afford provision for the Deer District Committee dealing with patients in the more easterly part of its jurisdiction. The cost of the hospital, one block of which has already been built, is estimated at about £4000. Addressing the company after the ceremony had been performed, Provost Leask is reported to have said in the course of his speech:—"The old place was not much to look at. As a piece of elegant architecture it left something to be desired; but the outside was not always the best part of buildings any more than of men and those who had put themselves, as he had done, to the trouble of learning from personal observation something about the internal arrangements of the old place, and who knew how many poor creatures had been tenderly cared for and nursed back to health in it, might be justified in hesitating to accept the change as an unmixed blessing, until experience had proved it to be so. Why, then, had it been found necessary to make this change? He would tell them. There was a body of gentlemen in Edinburgh who had been formed by a grandmotherly Government into a kind of moral policemen, with special reference to the preservation of public health throughout the country. For the performance of their duties any knowledge of local needs or local special circumstances was quite unnecessary. Indeed, the less they knew of these things the better they were able to carry out the cast-metal rules and regulations, and these they were privileged to apply and enforce with something resembling the despotism of a Russian Tsar. They seemed to have a belief that local men knew nothing about the requirements of their localities, or else could not be trusted to do their proper duties..... If he were asked to say something specially complimentary of their good town, he thought it would be that the fact that they had been able during the long period of upwards of 300 years to do without a hospital and for the last 20 years to supply their needs with what perhaps was the smallest epidemic hospital in the world, was proof of how remarkably healthy and desirable a place of residence Peterhead was..... In vain they of the town council pointed out that Peterhead never had any fevers, and that they had already accommodation ample for their needs, and that should occasion ever arise they could satisfy any temporary requirements in a much better way; and in vain did they lay before them the difficulty that was being experienced in the matter of a suitable site, and so on."

June 27th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Typhoid Fever Epidemic in Newtownards.

IT is satisfactory to learn that the recent typhoid fever epidemic in Newtownards has been completely stamped out. The public health committee of the town recommends the urban council to put before the Local Government Board schemes for introducing a good water-supply from outside the town precincts.

The Small-pox Wards in Lurgan Workhouse.

Mr. R. Agnew, Local Government Board inspector, has been holding an inquiry on oath at Lurgan workhouse into a series of charges made by Mr. W. M'Mullan of Portadown in connexion with his treatment and that of his family when patients in the small-pox hospital of Lurgan workhouse. It would appear that a child of Mr. M'Mullan, who is an insurance agent, was on Sept. 28th, 1904, pronounced by Dr. J. A. Corbitt of Portadown to be suffering from small-pox and subsequently the medical officer of health of the district, Mr. J. L. Rowlett, intimated that the whole family would have to go to the workhouse hospital. The ambulance in which they were conveyed was a two-wheeled van, loose in the springs, and caused anyone sitting in it to be jolted. In his evidence Mr. M'Mullan said that there were not sufficient beds in the place so he, with the nurse, sought some in another part of the building. Here they found articles of bedding scattered about the floor and covered with feline filth, lime crumblings from the ceiling, and dust intermixed with mildew. The bed which the witness finally got was a wooden one with a mattress only about one and a half inches thick. There was no pillow for the child's bed and the mother had to use a bundle of rugs as a substitute. The child died next day at 4 A.M., Dr. J. S. Darling having only seen the patient once in the witness's presence. The clothes given to himself and family were damp and so also were the walls of the building. Whilst they were there the nurse was very ill with neuralgia and the witness attributed this to the dampness of the building. The three boys were forced to sleep in one bed, no other being provided, and one had to use a bundle of clothing for a pillow. Since leaving the hospital his wife had been very ill. There was a difference of medical opinion as to the prognosis in the case. Dr. Corbitt in his evidence said that the child had had the disease for nine days, had practically passed all the most dangerous stages, and was on the way to recovery when he saw the patient on the day of the removal. Dr. Darling, medical officer of the Lurgan workhouse, said that in his opinion the removal in the ambulance (which he considered an improper vehicle) did not make any difference to the child, who was suffering from confluent hæmorrhagic small-pox and would have died as soon at home. The child was already doomed to die before removal. He had great difficulty in fixing the responsibility on anyone for the unpreparedness of the hospital for the patients' reception and as a fact he did not know of it until ten days afterwards. Dr. Martha Adams, resident medical officer, said that the person responsible for the unpreparedness of the hospital was one of the nurses who disobeyed her in not going to the master for the bedding. Both she and a nurse declared that the child was dying when admitted and that there was no possibility of recovery taking place. Dr. Samuel Agnew of Lurgan said that he considered that a case of confluent small-pox, which was assuming a hæmorrhagic character, between the seventh and eighth days could not have passed the critical or dangerous stage. Several other witnesses having been examined, the inquiry ended on June 23rd. Mr. Agnew will put the evidence before the Local Government Board with which the decision rests.

June 27th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Abolition of the Internat en Pharmacie.

THE general council of the Seine has decided to pension off at an early date the senior (*doyen*) *pharmacien en chef* of the lunatic asylums. The vacancy thus created will not be filled and the event betokens an impending reform in the pharmaceutical department of the hospitals, a reform which will in various ways effect a considerable aggregate saving. In a new asylum which the prefectoral administration has in hand just now there will be neither *pharmacien en chef* nor *interne en pharmacie* but the work of dispensing medicine will be done by assistants under the immediate control of a pharmaceutical chemist in the neighbourhood of the institution. If this experiment proves satisfactory the system will probably be extended to all the departmental lunatic asylums. The director of the Assistance Publique seems to be about to take a similar course, as may be inferred from the recent abolition of the position of *interne en pharmacie* in the hospitals of Brévannes, of Berck, and of Issy-les-Moulinaux.

Treatment of Pityriasis Versicolor.

At a meeting of the Therapeutical Society held on June 14th M. Gallois mentioned that painting a very extensive eruption of pityriasis versicolor with tincture of iodine might cause symptoms of iodism. Oxygenated water, on the other hand, presented a variety of advantages for this purpose. In addition to being a mild microbicide and harmless in other respects it was capable of dissolving albumin so that it might be expected to cleanse the skin and promptly to destroy the microsporon. M. Gallois has treated several patients in this way and always with success.

The Eyesight of Cyclists and Motorists.

At a meeting of the Academy of Medicine held on June 13th M. Chauvel read a report on a work by M. Mirovitch, entitled "Some Considerations on the Impairments of Vision due to Cycling and Motoring and on Methods of Remedying them." According to M. Mirovitch, the injurious influences in question were, especially in cyclists who maintain a high speed, the abnormal position of the head and the straining of the eyeballs in the effort to obtain distant vision. The action of the compression exercised by the air on the visual organs was less evident. The whole body was injuriously affected in cases of excessive speed, for the heart, the lungs, and the brain suffered as well as the eyes. M. Mirovitch recommended that the eyes should be protected by means of spectacles which permittted the circulation of air. These appliances seemed, however, to be too heavy for the use of cyclists and to be hardly available except for the drivers of motor-cars.

Sea Water in the Treatment of Tuberculosis.

M. René Quinton showed last year, as the result of a long investigation, that sea water ought to be considered as the true normal physiological medium for living creatures. It was in sea water that the most elementary of them were developed in the origin of species; it was also in a special manner the cradle of life on our earth, and throughout the complicated succession of living forms in evolution it has remained the nutrient fluid perpetually available. At a meeting of the Academy of Medicine held on June 6th M. Quinton, proceeding to consider some practical applications of his views, said that he had made a trial of sea water in the treatment of some pathological conditions characterised by alterations in the chemistry of the tissues, and that, assisted by M. Simon, he had commenced with tuberculosis. They first rendered sea water isotonic by diluting it with pure water until its saline component fell to 7 per 1000, the only proportion in which the fluid when brought into contact with the tissues of the human body did not cause changes in them. They then sterilised the fluid in the cold and injected from 50 to 300 cubic centimetres under the skin every three or four days. This treatment was employed for 18 tuberculous patients and showed unquestionable tonic properties from the very first. The patients gained weight steadily at an average rate of 27 grammes per day. Of the 18 cases, three who were treated at too advanced a stage were not materially benefited, but the remaining 15 were greatly improved, both in their general condition and also as regards the special lesions, whether in the lungs or the glands. The expectoration diminished and the bacilli in it were reduced in number.

Venereal Diseases.

The Director of the Assistance Publique has just taken a step which is worthy of notice. By means of posters distributed throughout Paris he has made it known to the populace that gratuitous advice with regard to the treatment of venereal diseases will be given at certain definite hours during the morning or the afternoon at 21 dispensaries. It is to be hoped that the municipal council will shortly arrange for evening consultations for the sake of those who cannot get away from their work during the day.

June 26th.

ITALY.

(FROM OUR OWN CORRESPONDENT.)

The Weather.

"SUMMER set in with its wonted severity," wrote Horace Walpole of Scotland, where, according to compatriot admission, "there is no climate but only weather." Is Italy tending to be a candidate for such sinister meteorological distinction? One might be pardoned for entertaining the misgiving if the experience of the last six months is to be repeated year by year. "Within the memory of the oldest inhabitant" (who, in spite of Mark Tapley, sometimes remembers something) such a winter as the last was never known, either for intensity or duration. During January and February the central provinces might have been a landslip from Siberia, and Florence, with the Arno frozen between the Ponte Vecchio and the Ponte Trinità, might as well have called herself Tobolsk. In the sunny, subtropical south we were little better off, looking out at Taormina, for instance, on steady snowfall, while (aggravating thought!) we read in the English papers that Brighton and Hastings were basking in delicious warmth. Spring brought little change for the better and we passed from the "chilled shot" of Boreas to the drenching hose of Jupiter Pluvius, till the customary stampede from Rome or Florence to the Lago di Como or Maggiore was arrested by the fact that the "Lakes" had met the stampeders more than half-way. Italy, indeed, must (meteorologically speaking) be on her better behaviour if she is to retain her character for azure skies and genial warmth and to attract to her cities and her seaboard that enriching flood of "forestieri" which is to her shrivelled "circulation" what the rising of the Nile is to parched Lower Egypt. Even as I write, at the latter third of June, there is a steady rainfall, and not only is "Our Lady of Flowers" in an exceptionally lacrymose mood, but from every province, particularly in the Alta Italia and the Romagna, comes news of destructive hailstorms and persistent downpour with overflowing streams and battered vineyards, involving agricultural and winegrowing interests alike in something little short of ruin.

National Hygienic Competition.

In one of the masterly digests which the late Sir James Coxe used to prefix to the annual reports of the Scottish Commissioners in Lunacy he commented on the urgent need of elementary instruction in hygiene in our public schools, so as (in his own happy phrase) "to make every young man and young woman the intelligent custodians of their own health." The wholesome suggestion is bearing fruit in Italy. Your readers may remember the tragic death of the leading surgeon of the Tuscan school, Professor Colzi, as narrated in THE LANCET of April 25th, 1903, p. 1205. Well, the sum raised to form a perennial memorial of him has been devoted to the purpose well known to have been near his heart—that of training the youth at the public schools in the laws of health—and, with that object, to the bestowal of a prize, open to general competition, for the best manual of elementary hygiene. The judges were chosen from the "Società Toscana d'Igiene," who, after a careful perusal and comparison of the many treatises sent in, awarded the prize to Captain Giuseppe Cigliutti, M.D., of the regiment of mountain artillery quartered at Turin. The treatise, or manual, admirably well adapted for its purpose, will, it is understood, be introduced into the national schools and prizes will be periodically given for proficiency in its contents. A beginning has thus been made in a direction long lying unutilised in Italy, while Florence has "scored

again" in having been the prime mover in what may be hailed as an educational "Instauratio Magna."

The Medical Profession in Parliament.

In Latin countries the physician and the surgeon are oftener represented in the legislature than in those of Teutonic or Slav nationality and Italy in particular owes much of her best statesmanship to the intervention of such experts in her Chambers, Upper and Lower. Not only in general politics has she to thank her medical Premier Giovanni Lanza for much wise legislation and for the crowning service of "planting the colours of the House of Savoy on the Capitol," but, in special fields, like public health, she is indebted to Agostino Bertani, surgeon-general under Garibaldi, for a masterly "codice" which now forms part of the statute book. Baccelli, too, has done signal work in raising the standard of education, medical and lay, and has exercised a wise conservatism in arresting the retrograde faddism which has its place in Italy as elsewhere—"anti-vaccination"—to cite one instance out of many. The latest addition to the professional ranks in the Chamber of Deputies is that of Dr. Queirolo, professor of clinical medicine in the University of Pisa, just returned at a bye-election for that seat of learning by a sweeping majority. Dr. Queirolo, an active and able participant in the annual congresses of internal medicine, is welcomed by all parties as a distinct acquisition to the legislative body, in token of which he was entertained on June 22nd at a banquet by his constituents, including many of the Senatus Academicus and the leading citizens of Pisa and its province.

June 26th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

The Prevention of Tuberculosis among Negroes.

A SUBCOMMITTEE of 21 coloured physicians and clergymen has been organised by the New York Charity Organisation Society's Committee on the Prevention of Tuberculosis to fight tuberculosis among the coloured people of New York. The New York health board is coöperating with the movement and has placed its dispensary under the supervision of the medical members of the subcommittee for three evenings a week. A course of illustrated lectures treating of tuberculosis will be given shortly in the churches for coloured congregations. It is stated that there are between 60,000 and 65,000 coloured persons in New York city and that their death-rate from tuberculosis is 5·33 per 1000, as against 2·37 per 1000 among the whites.

Yellow Fever in the Isthmus of Panama.

Yellow fever is still present in the Isthmus of Panama. Several fresh cases have been reported by Governor Magoon, while a passenger from Colon to New York was found to be suffering from the disease upon his arrival in New York and has since died.

Patent Medicines.

Mr. Bok, the editor of the *Ladies' Home Journal*, has been carrying on for some time past a crusade against what he terms the patent medicine curse in America and has contributed an able letter on the subject to the *Journal of the American Medical Association* of May 20th. He points out that although various Bills have been introduced into the legislatures of several States having for their object the regulation of the sales of injurious patent medicines or the compulsory printing of the ingredients of these medicines on the label of each bottle, under penalty of fine or conviction, the passage of such Bills has been defeated by the active opposition of the proprietors of some patent medicines. The proprietors of patent medicines are, as a rule, rich, and by means of the expenditure of large sums they have been able to employ skilful lawyers to defeat measures aimed at their products. On the other hand, according to Mr. Bok, the chief advocates of the repressive Bills have been members of the Woman's Christian Temperance Union, whose zeal usually exceeded their discretion and whose advocacy, although well-intentioned, has consequently been ineffective. Members of the medical profession took no active part whatever in upholding Bills to control the sale of certain patent medicines. Mr. Bok believes that so long as the medical fraternity exhibits so little interest in the matter the public in general is not likely to urge effective legislation against injurious patent medicines. He therefore contends that medical men throughout the country should coöperate in this legislative work.

Rush Medical College, Chicago.

The announcement has been made that Rush Medical College, beginning with the session of 1905–06, will add a fifth year to the curriculum, which, however, for the present will be optional. The work of this additional year will be that of (*a*) a fellowship in one of the departments of the College, or (*b*) an interneship in the hospital under the following conditions—namely (1) that each student taking such work will be under the supervision of the Faculty, by whom the hospital in which the interneship is taken must be approved; (2) that the student must present evidence of thorough clinical work and, if possible, an exhaustive study of a selected group of clinical cases involving original work; and (3) that he will be required to pass a special examination at the end of the year. When he shall have successfully completed the fifth year he will be given the degree of Medicinæ Doctor *cum laude*.

June 21st.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

Adoption of a Standard Time for India.

THE Government of India has issued instructions for the introduction of a standard time on all railways and in telegraph offices to come into force at midnight between June 30th and July 1st, 1905. This standard time will be exactly five and a half hours in advance of Greenwich and nine minutes in advance of the Madras time which has hitherto been in use for the railways. The Rangoon time will be six and one-eighth hours ahead of Greenwich and five minutes 23 seconds earlier than the present Rangoon time. It is not proposed to prescribe the extension of the new system beyond the sphere of the railways and telegraphs but there is little doubt that it will come ultimately to be adopted everywhere. Calcutta, Bombay, and Karachi now follow the local time of their respective longitudes and if there be a desire expressed the Government will be prepared to order the new standard at all Government institutions.

The Decline of the Plague Epidemic.

The plague mortality throughout India is happily on the decline. During the week ending May 27th the total fell from 35,992 to 23,088. The principal figures are: Punjab, 16,612 against 25,340; United Provinces, 2941 against 5132; Bengal 894 against 1069; Rajputana, 1171 against 2142; Bombay districts 441 against 585; Burmah 110 against 58; Kashmir 138 against 200; Bombay city, 497 against 594; Calcutta, 146 against 172; and Madras Presidency, 11 against 19. It will be noticed that the numbers of deaths and not cases are generally taken in India for the statistical records of plague. As a matter of fact the cases returned exceed the deaths by a very small proportion, by which it is not to be inferred that the mortality is so excessively high but simply that a very large number of cases fail to be discovered. Take, for example, the latest returns for Rangoon, which has had its first outbreak this season. From Feb. 5th to May 31st 1341 cases with 1197 deaths are recorded, a case mortality of 89 per cent. The real mortality from plague is about 75 per cent., so that it is almost certain some 250 cases of plague in Rangoon were undiscovered. The same experience is met with in Calcutta, Bombay, and other infected cities.

Extended Period of Study for the Medical Degree of the University of Calcutta.

It is reported that the period of study for the medical degree in the University of Calcutta is shortly to be raised from five to six years. It has been five years for a long time, even when the period of study in England was four years. Now a corresponding increase of one year is to be made in the local university. Few will question that it is a change in the right direction.

A Case of Suttee.

Now and again an instance of suttee is reported in some outlying district showing how the barbarous instinct still lingers amongst the superstitious and ignorant people who live outside the influence of Western control. On May 10th in a village named Shahjahanpur in the Sitapur district a man died and his body was burnt in the usual way. The

account says that after the men had gone away the widow, who was some 50 yards distant, suddenly threw off her "sarce," made a rush for the funeral pyre, flung herself face downwards on it, and was burnt to death. No attempt was made to rescue her. There is little doubt that the whole affair was pre-arranged. The men do not in the ordinary course go right away before the cremation is completed and that a woman can run 50 yards and be burnt to death in the view of numbers of men without any attempt to stop her or to save her shows that the law was intentionally broken. These barbarous relics of an ancient custom will continue to recur unless the Government punishes more summarily and more severely the guilty relatives.

Cigarette Smoking among the Natives of India.

The tirade against cigarette smoking, which has been reported in one of the States of the American Union, is in curious contrast with the extraordinary development of this habit among the natives of India. The trade in cigarettes is increasing enormously. Last year no less than 584,000,000 were imported—an increase of 24·3 per cent.—and valued at 21 lakhs of rupees. The habit has caught on and the Indian demands the cheapest article. The cheapest cigarettes are imported from Shanghai and Ceylon—the former selling at R.1 A. 9 pies 4 per 1000, whereas the Ceylon cigarettes fetch about 2½ annas per 1000 more. There is an enormous importation from the United Kingdom—some 385,000,000—which sell at aoout 5s. per 1000 and in addition some 111,000,000 are imported from the United States which sell at a little less. This is in excess of the local manufacture, which is considerable and increasing. If tobacco smoking in the form of cigarettes could replace the disastrous tastes for Indian hemp and cocaine it would be a blessing. Unfortunately, however, the fancy for cigarettes is rather the result of the higher wages now obtainable in all the chief towns and must be looked upon as a small luxury indulged in by the native as a consequence of his improved position.

June 9th.

Obituary.

ARTHUR DAVID GRIFFITHS, M.D. BRUX., L.R.C.P. LOND., M.R.C.S. ENG.

MEDICAL men are unfortunately not always sufficiently careful of their own health, although it is matter of common knowledge that the fatigues and anxieties of a busy practice are decidedly trying to the constitution. A sad example of sudden and untimely death is afforded by the case of Dr. Arthur David Griffiths of Bridgend, Glamorganshire, who was found to be seriously ill in his own house on the early morning of June 15th and expired in less than an hour after the discovery was made. Typhoid fever has been prevalent in Bridgend for several weeks, Mrs. Griffiths, who is still suffering from the disease, being among the first cases that occurred. Dr. Griffiths was attending 35 of these patients immediately before his death and the heavy work thereby entailed, together with anxiety respecting his wife, materially contributed to the fatal result. He had for some days been complaining that his heart was causing him trouble and on the evening before his death he telephoned to a relative in Bristol on the subject. At the inquest, which was held by Mr. Howell Cuthbertson, the district coroner, on June 16th, evidence was given by Miss Olive Griffiths, sister of the deceased, and by the nurse in attendance on Mrs. Griffiths. Mr. William E. Thomas of Bridgend, who is the family medical attendant, attributed the death to heart failure from overwork and a verdict to this effect was accordingly returned.

Dr. Griffiths who was 34 years of age at the time of his death, received his medical education partly in the Bristol school and partly in King's College, London, taking the diplomas of L.R.C.P. Lond. and M.R.C.S. Eng. in 1894. In 1897 he obtained the degree of M.D. at the University of Brussels. He commenced practice in the Forest of Dean in Gloucestershire, afterwards proceeded to Ramsgate, where he was an honorary surgeon to the Ramsgate Dispensary, and about four years later removed to Bridgend, where he held several appointments and had an extensive practice. In September, 1904, he had the misfortune to be made the object of a vile conspiracy planned by an electrician and his wife—a couple named Faithfull. The facts of the case are outlined in THE LANCET of Dec. 17th, 1904, p. 1733. The woman asked advice of Dr. Griffiths for some gynæcological ailment in 1903 and again in September, 1904, the husband being each time aware of the consultations. On the second occasion he rushed into the room during the examination of the patient, making serious allegations against Dr. Griffiths, who brought an action against him at the Swansea assizes for assault and slander. Neither the defendant nor his wife put in an appearance and a few days before the date of the trial their solicitor stated that he did not know their whereabouts. The jury awarded Dr. Griffiths £500 damages and the public opinion of the district was in sympathy with this vindication of his innocence. Dr. Griffiths, however, did not receive any payment in respect of the damages awarded him, while his legal expenses for the action amounted to about £205, and a fund to defray the latter was collected by a committee, consisting of the chairman and honorary secretaries of the Cardiff division of the British Medical Association and of the Cardiff Medical Society respectively, together with Dr. A. P. Fiddian of Cardiff and Dr. R. S. Stewart and Mr. W. Randall of Bridgend. Subscriptions to this fund were acknowledged by Dr. Fiddian in our columns on various occasions from Jan. 21st, 1905, to the beginning of April, and a considerable sum was in the result handed to Dr. Griffiths.

Of sunny, kindly personality, straight and genuine in every sense, he was one who instinctively was all that was honourable. He will be sadly missed not only by his more immediate friends but especially by the St. John Ambulance Brigade, in whose work he had long been enthusiastically and actively interested, and particularly so will this be the case in the No. 7 district in which he held staff rank. All his brother officers will assuredly feel a keen sense of personal loss in the untimely ending of a life which, to quote the motto of the order, was sacrificed "for service in the cause of humanity."

WILLIAM ALDER, L.S.A.

WE regret to announce the death of Mr. William Alder which took place at Monkwearmouth on June 19th. He had been in failing health for some time and had quite recently returned from a sojourn at Bournemouth which unfortunately had been without benefit. The deceased was an old Guy's Hospital man and a Licentiate of the Society of Apothecaries (1893). For two years after qualifying he served as surgeon on board the s.s. *Esquimaux* and s.s. *Eclipse*, vessels engaged in the whaling trade. After this he settled in Monkwearmouth and soon acquired a large practice and became very well known in the district. For a period of three years from 1896 he served on the town council but did not afterwards seek re-election. He was about 40 years of age. Death was due to chronic nephritis.

A HOSPITAL TENT.—A very interesting feature of the annual camp of the National Fire Brigades Union, held at the Crystal Palace, is the hospital tent, which has been fully equipped by Messrs. Carter of New Cavendish-street, W., on the most improved principles. The aseptic furniture and hospital appliances are of the latest description and members of the medical profession and visitors in any way interested in ambulance work should take the opportunity of inspecting the tent.

HEALTH CONDITIONS IN THE FAROE ISLANDS.—In his report for the year 1904 Mr. Villiers, British consul at Thorshavn, writes: "The condition of health in the islands cannot be regarded as altogether satisfactory. In spite of the natural salubrity of the mid-Atlantic isles, with their pure polar breezes, diphtheria and typhoid fever constantly appear in epidemic form in various villages, cases having occurred in all the larger islands in recent years. The health authorities find it difficult to enforce hygienic regulations among a population that seem to fail to realise the risk of infection. Sanitary arrangements are most primitive and what would be possible without being pestilential when inhabitants were scarce and houses less clustered becomes impossible in the rapidly growing villages. Should fishing vessels enter and wish to have communication with the shore in places where infectious diseases are prevalent the master, when reporting his vessel to the quarantine officer, will in future be warned by him of the existing danger. Animals have also been attacked by disease, a blindness having befallen sheep on Ostero and on Sudero. The sheep had been free from this disease for many years. As the sheep here are neither folded nor herded blindness is fatally dangerous on the precipitous coasts of these islands."

METROPOLITAN HOSPITAL SUNDAY FUND.

THE following are some of the principal amounts received at the Mansion House, or notified directly to us as having been collected, on behalf of the Metropolitan Hospital Sunday Fund up to Thursday morning, when the sum paid in exceeded £30,000, including a donation of £12,500 from the executors of the late Mr. Wyndham Francis Cook.

	£	s.	d.
St. Michael's, Chester-square	1351	0	0
Charles Morrison, Esq.	1000	0	0
William Herring, Esq.	1000	0	0
Sir Savile Crossley	500	0	0
St. Paul's Cathedral	369	0	0
Tinsitic Church (first instalment)...	270	0	0
Christ Church, Chislehurst	212	0	0
Messrs. Watts, Watts, and Co.	210	0	0
"A. G. P."	200	0	0
"A. W."	200	0	0
St. Michael's, Paddington	172	0	0
Brixton Congregational Church	123	0	0
St. Peter's, Brockley...	112	0	0
St. John's Presbyterian Church, Forest Hill	101	0	0
W. D. Graham Menzies, Esq.	100	0	0
Alexander Miller, Esq.	100	0	0
Mr. and Mrs. C. E. Layton	100	0	0
"T. G. D."	100	0	0
Messrs. J. S. Morgan and Co.	100	0	0
St. Mary's, Shortlands	92	0	0
Trinity Church, Finchley-road	86	0	0
St. Leonard's with All Saints', Streatham	84	0	0
Christ Church, Lee	80	0	0
St. Andrew's Presbyterian Church, Frognall	80	0	0
St. Anne's, Wandsworth	75	0	0
St. George's, Perry Hill	75	0	0
Chislehurst Wesleyan Chapel	66	0	0
St. John the Divine, Kennington	65	0	0
Christ Church, Newgate-street	59	0	0
St. Luke's, Patterses	58	0	0
Weybridge Parish Church	58	0	0
Marylebone Presbyterian Church	56	0	0
Holy Trinity, Eltham	53	0	0
St. Luke's, Hornsey	52	0	0
St. Matthew's, Ealing Common	51	0	0
Dulwich College Chapel	51	0	0
Earl of Cranbrook	50	0	0
"In Memoriam, R. G. S."	50	0	0
Church of the Ascension, Blackheath	48	0	0
Merton Parish Church	44	0	0
St. Mary Magdalen, Enfield	43	0	0
St. Anne's, Highgate Rise	40	0	0
St. John's, Sidcup	40	0	0
St. Augustine's, South Kensington	39	0	0
Farm-street Roman Catholic Church	37	0	0
All Saints', Friern Barnet	37	0	0
Chiswick Parish Church	37	0	0
Ferme-park Baptist Church	37	0	0
St. Michael's, Betchworth	36	0	0
Mitcham Parish Church	36	0	0
St. Mildred, Lee	36	0	0
St. Matthew's, Westminster	35	0	0
St. Mary's Old Church, Stoke Newington	35	0	0
St. George's, Bloomsbury	35	0	0
West Wickham Church	35	0	0
Fulham Parish Church	34	0	0
Great Warley Parish Church	34	0	0
St. Peter's, Clapham	31	0	0
Blackheath Wesleyan Church	30	0	0
St. Barnabas, Dulwich	30	0	0
St. Paul's, Upper Holloway	28	0	0
St. Michael and All Angels', Stoke Newington	28	0	0
St. Mary's, Ewell	28	0	0
Woolberry Down Baptist Chapel	27	0	0
St. Stephen's, Coleman-street	26	0	0
St. James's, Camberwell	26	0	0
Brixton Unitarian Church	25	0	0
Christ Church, Greenwich	25	0	0
Launcelot Fletcher, Esq.	25	0	0
Carmelite Church, Kensington	25	0	0
H. Dent Brocklehurst, Esq.	25	0	0
St. Thomas's, Clapton...	25	0	0
St. Mary's, Cuddington	23	0	0
St. Luke's, West Norwood	24	0	0
Magdalen Hospital, Streatham	24	0	0
Harrow Weald Church	24	0	0
All Saints', Leyton	22	0	0
St. Paul's, Canonbury...	22	0	0
St. Dionis, Fulham	21	0	0
Orange-street Congregational Church	21	0	0
All Saints', Croxley Green	21	0	0
St. Luke's, Deptford	20	0	0
St. Stephen's, Westminster	20	0	0
St. Michael's, Sydenham	20	0	0
Messrs. König Bros.	10	0	0
Direction der Disconto Gesellschaft	10	0	0
Deutsche Bank	10	0	0
Messrs. Ladenburg	10	0	0

Medical News.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held in June the following candidates passed in the subjects indicated:—

Surgery.—A. Besley (Section II.), Leeds; G. N. Bigga (Sections I. and II.), St. Thomas's Hospital and Durham; V. H. Blake (Sections I. and II.), St. George's Hospital; H. R. Grellet (Section II.), Guy's Hospital; F. E. Gubb (Section II.), Royal Free Hospital; A. H. Hughes, Bristol; H. A. Parker (Section I.), St. Thomas's Hospital; J. W. Peatt (Section I.), London Hospital; T. R. St. Johnston (Sections I. and II.), Birmingham; N. A. Stutterheim (Sections I. and II.), Utrecht; A. L. Walters (Sections I. and II.), St. Thomas's Hospital; and J. M. Wilson, Middlesex Hospital.

Medicine.—M. B. Dawson (Section II.), Middlesex Hospital; F. E. Gubb (Sections I. and II.), Royal Free Hospital; P. A. Hendley (Sections I. and II.), St. Mary's Hospital; F. J. Macphail (Sections I. and II.), Liverpool; T. E. St. Johnston (Sections I. and II.), Birmingham; and J. M. Wilson, Middlesex Hospital.

Forensic Medicine.—J. J. Commerell, Leyden; P. A. Hendley, St. Mary's Hospital; F. J. Macphail Liverpool; H. J. May, London Hospital; G. B. Messenger, Westminster Hospital; E. B. Miles, London Hospital; R. H. Terry, Guy's Hospital; and J. M. Wilson, Middlesex Hospital.

Midwifery.—G. N. Bigga, St. Thomas's Hospital and Durham; V. H. Blake, St. George's Hospital; H. S. Burnell-Jones, Cardiff, Leeds, and London Hospital; W. L. Crabtree, Leeds and Charing Cross Hospital; E. B. Miles, London Hospital; and H. M. Waller, St. Bartholomew's Hospital.

The diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—A. Besley, J. J. Commerell, W. L. Crabtree, M. B. Dawson, H. R. Grellet, F. E. Gubb, P. A. Hendley, and A. H. Hughes.

TRINITY COLLEGE, DUBLIN.—At the final examination in medicine held in Trinity term the following candidates were successful:—

Section A.—Cecil Conyngham, Edward C. Stoney, Albert T. J. M'Creery, Henry P. Hart, John W. Lane, Eleanor E. Finegan, Arthur E. Knapp, Wallace D. Mitchell, Herbert R. N. Fowler, George H. Stack, John Gray, and James G. M. Moloney.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE: THE BACTERIOLOGICAL DEPARTMENT.—During the last 12 months 1474 specimens have been examined in the bacteriological department of the University of Durham College of Medicine, Newcastle-upon-Tyne, showing an increase of 352 over the previous year. The great majority of the specimens were examined for the various county councils and public institutions in the neighbourhood. Out of 774 specimens of sputum examined for tubercle bacilli, 39 per cent. were found to be positive. Out of 421 cases of suspected diphtheria, 38 per cent. were found to be positive, whilst from 149 specimens of blood from suspected enteric fever 47 per cent. were positive. 48 samples of water were examined quantitatively for bacteria and six samples of milk for bacillus typhosus. Urine was examined in 25 cases for bacillus tuberculosis with five positive results. Ten specimens of blood were examined for anthrax with seven positive results. One sample was examined for glanders with a positive result and one sample of brawn was examined for bacillus enteritidis with a positive result.

NATIONAL SANATORIUM FOR CONSUMPTION AND DISEASES OF THE CHEST.—The annual general meeting of governors of the National Sanatorium for Consumption and Diseases of the Chest at Bournemouth in Hampshire was held in London on May 11th at the Westminster Palace Hotel, the Earl of Eldon (the president of the association) being in the chair. This sanatorium was founded in 1855 for the reception of patients from all parts of the kingdom. The report presented at the meeting showed that the ordinary income for the year ended Dec. 31st, 1904, amounted to £2999 and the ordinary expenditure to £3094. The balance sheet showed a deficit of £426 and in addition to this indebtedness there were at the end of the year several accounts still unpaid amounting to over £1000. In April, 1904, the committee came to the conclusion that owing to the increasing demands for admission an extension of the institution could not be longer delayed if its work was to be efficiently carried on. The carrying out of these necessary improvements caused a temporary interruption in the reception of patients but owing to their completion the sanatorium is now able to receive 85 patients (43 men and 42 women), the dining rooms have been enlarged, six more baths have been added, and sash windows in the sleeping apartments have been replaced by casements. The outlay incurred, including furnishing, amounted to £3000, towards which only about £2000 have been contributed, and it is mainly on this account that the institution is so heavily in debt. The sanatorium is now

entering upon the fiftieth year of its existence and in order to celebrate the event the committee is making a special jubilee appeal for the extinction of the debt and for new annual subscriptions, so that the permanent income may be sufficient to meet modern requirements. The patients remaining in the sanatorium on Jan. 1st, 1904, were 35 men and 37 women and during the year 104 men and 116 women were admitted. There were three deaths and among the patients of both sexes who were discharged the results were: much improved, 78; improved, 105; no improvement, 31. The bankers of the institution are Messrs. Barclay and Co., Limited, Pall Mall East, London, and the Wilts and Dorset Bank, Bournemouth. Inquiries should be addressed to the Secretary at the National Sanatorium, Bournemouth.

BRITISH ELECTRO-THERAPEUTIC SOCIETY.—Dr. Donald Baynes, President of the British Electro-Therapeutic Society, took the chair at the annual dinner of this society, held in the Prince's Rooms of the Criterion Restaurant, London, on June 23rd. The society consists of about 130 medical men interested in the treatment of disease by electrical methods. One of the objects of the society is to educate the profession in the matter of electro-therapeutics and to endeavour to put a stop to the present encouragement given by prominent members of the profession to the employment of unqualified assistance in the treatment of their patients by electricity and other physical agents. The council of the society is now engaged in taking into very serious consideration medical electrical treatment by unqualified persons and it is hoped that its efforts may meet with some success. Monthly meetings are held and in the fourth annual report of the council it is stated that the average attendance of the members is very satisfactory. After the loyal toasts had been duly honoured the chairman proposed the toast of "The British Electro-Therapeutic Society." He entered in some detail into the grievances of the members of the society and particularly referred to ten medical men whose names were announced as recommending a certain individual for the treatment of obesity by the combined light treatment, of nervous troubles by blue lights, and of gout, rheumatism, sciatica, lumbago, &c., by the combined bath. Dr. H. Lewis Jones, in responding to this toast, advised the members of the society to concentrate their efforts in the direction of learning how to cure diseases that now were considered incurable. He mentioned with regret that Guy's Hospital had issued a circular from its light department offering to treat paying patients at an inclusive fee of six guineas, stating as a reason that the hospital wished to pay for certain apparatus. Other toasts followed and the proceedings terminated at a late hour.

HOSPITAL EXTENSION AT TOTTENHAM.—Two foundation stones of the extensions of the Tottenham Hospital were laid on June 20th—one of a north wing to the front of the hospital as a residential block for the resident medical and surgical staff in its lower part and in a self-contained upper part for a portion of the nursing staff, and the other of an extension to the rear of the hospital, consisting of two new wards and an operating theatre to be called the Drapers' Block. The Lord Mayor and Sheriffs, who drove in state from the Mansion House to the hospital, were received by Sir Francis Cory-Wright, chairman of the hospital, with representatives of the hospital board of management and medical staff. Sir F. Cory-Wright in his address to the Lord Mayor before the stone-laying said that when six years ago the hospital was reconstructed it was in a languishing condition, with only 17 patients to occupy the 73 beds. Since then the needs of the district had grown to such a great extent that it had become absolutely necessary to increase their accommodation. It was his belief that one day their institution would become a second London Hospital. The King Edward's Fund and the Drapers' Company had come forward with most generous support and they looked forward confidently to raising the sum of £6000, which would enable them to bring up the number of beds to 130. The Lord Mayor, who was presented with a silver trowel by Mr. Rowland Plumbe, the architect, on behalf of the hospital, declared the foundation stone of the front block well and truly laid. A vote of thanks to the Lord Mayor and Sheriffs was proposed by Mr. J. P. Beavan, honorary treasurer to the hospital, and seconded by Mr. J. Cloudsley. The vote was acknowledged by the Lord Mayor, and on behalf of the sheriffs in a felicitous speech by Sheriff Vezey Strong. A similar ceremony was performed in the rear of the building, where the foundation stone of the Drapers' Block was laid by Mr. J. Tolhurst, the Master of the Drapers' Company, a silver trowel being also handed to him by Mr. Rowland Plumbe. The chairman of the hospital in his address stated that towards the £20,000 required for the present extensions the Drapers' Company had given £6000. A vote of thanks to the Worshipful Master and Court of Assistants was proposed by Mr. John Langton, chairman of the medical committee, and seconded by Mr. Charles Churchill, vice-chairman of the hospital. The members of the medical staff were present in their academic robes and a large concourse of the supporters of the hospital witnessed the ceremony. Afterwards the guests inspected the wards of the hospital and walked through the grounds, which extend to several acres. The extension includes not only the two new blocks but also the enlargement of two of the present wards, containing 12 beds, so that they will hold 24 beds each; an x ray and electrical department, and a new pathological department, consisting of a spacious museum and a laboratory. The latter part of the scheme is largely owing to the generosity of one of the members of the honorary surgical staff.

DONATIONS AND BEQUESTS.—Dr. Thomas Trollope, of St. Leonards-on-Sea, by will bequeathed £1000 to the Hastings and St. Leonards and East Sussex Hospital; £1000 to the vicar and churchwardens of Christ Church, St. Leonards-on-Sea, for the benefit of the sick and poor of the parish; and after making further bequests, provided that his estate be sufficient, a further £1000 to the East Sussex Hospital.—The Zunz trustees have granted to the Friedenheim Home, Hampstead, £3000 on condition that the sum of £600 is raised by other subscribers.—An anonymous donation of £500 has been sent to the Bristol Royal Infirmary.—Miss Symers of St. Helen's has given £1000 to the building fund for enlarging the nurses' accommodation at the Victoria Hospital, Dundee.

HOSPITAL APPEALS.—In March last an appeal on behalf of Guy's Hospital was issued asking first, for £100,000, the balance of the funds sought to be raised in 1901 and urgently needed to carry Guy's Hospital through present straits; and secondly, for annual contributions of sufficient amount to enable the hospital to maintain its present work in continued efficiency. This appeal has been met in many quarters by most generous help. Towards the £100,000 required on capital account the response up to date is, roundly, £49,000. But in analysing this sum we find some striking and curious facts. 138 contributors, in sums ranging from £25 to £5000, gave about £46,000. 220 contributors of sums under £25 subscribed rather more than £1000 and the balance is provided by contributions from the million shillings fund. The appeal has been sent into the offices and homes of over 100,000 of the well-to-do classes in the metropolis and in addition personal letters have been addressed to some thousands of those who were considered likely to subscribe, yet a direct response has been received from only 358 persons. Mr. H. Cosmo O. Bonsor, the treasurer, in a letter which we have received from him, earnestly asks those who "have this world's goods" to "help us now and also to remember Guy's Hospital in their wills. Experience has taught us how much the permanence and prosperity of our charitable foundations depend on this kindly forethought for the needs of others on the part of those who are no longer among us."—The committee of University College Hospital has issued a special appeal for funds, contributions from the public not being sufficient to meet the requirements of the hospital. Quite recently it has been necessary to sell out stock to produce £2000 to pay pressing tradesmen's bills. The committee finds itself placed in further difficulty owing to the new building having been handed over to it in an unfinished state by the executors of the late Sir J. Blundell Maple. The sum placed by him at the disposal of the executors for the completion of the building has been exhausted, and they have no power to expend further money on it. The committee is therefore compelled to provide a sum of about £3200 for the execution of absolutely essential work. The committee most earnestly appeals for donations to enable it to meet the cost of this work and also for contributions, in the form of annual subscriptions and donations, for the maintenance of the hospital so as to avoid further sales of stock and the consequent diminution of the permanent income of the charity. The appeal is signed by the Duke of Bedford, President, Lord Monkswell, treasurer, and the chairman and vice-chairman of the hospital committee.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

New Medical Bills.

AT this advanced period of the session it is useless to expect to make progress with Bills introduced by private members but there is an obvious advantage in having the text of a Bill printed and circulated even although the prospect of legislation is not immediate. No doubt it is with a view to gaining this advantage that Sir JOHN BATTY TUKE has this week introduced two Bills affecting medical men and dentists. The object of one is to prohibit joint-stock companies from acting as physicians, surgeons, or medical practitioners, and the other is to prohibit joint-stock companies from carrying on practice as dentists except by means of duly qualified persons.

Medical Affairs in Scotland.

When the Scotch estimates were considered in the House of Commons on June 22nd some references were made to medical affairs in the northern kingdom. It was a matter of complaint that there was only one Local Government Board medical inspector, whereas Ireland has seven, and the suggestion was put forward that if the Board did its duties more thoroughly many schools, particularly in the Highlands and Islands, would not need to be closed so frequently on account of epidemics. In his reply on the debate the LORD ADVOCATE explained that so far as the Local Government Board was aware one medical inspector was able sufficiently to discharge the duties that fell upon him, and there was no justification for appointing additional inspectors. Another complaint was that humanised lymph was still used in some districts. The LORD ADVOCATE stated, however, that some parents preferred humanised lymph rather than calf lymph and the Board fell in with their wishes. For those vaccinators who asked for it a small supply of humanised lymph was always available.

HOUSE OF COMMONS.

MONDAY, JUNE 26TH.

Removals from Medical and Dental Registers.

MR. WEIR asked the Secretary of State for the Home Department whether having regard to the fact that during recent years 20 names had been struck off the Medical Register for infamous conduct in a professional respect, whilst six names were removed from the Dental Register for a similar cause, he would state in how many instances the names were removed on charges of adultery.—MR. AKERS DOUGLAS replied: From the Medical Register in four cases; from the Dental Register in none.

TUESDAY, JUNE 27TH.

Lymph Calves as Food.

MR. SYDNEY BUXTON asked the Secretary to the Local Government Board whether the carcasses of calves inoculated for lymph at the Local Government Board vaccine station were sold for food in London, and if so, whether he would give instructions to have such carcasses destroyed instead of being returned to the contractors.—MR. GERALD BALFOUR answered: As I stated in reply to a question put to me by the honourable Member for Ross and Cromarty on the 30th ult. I am advised that there is no evidence whatever that the carcasses of animals used for the purpose referred to are thereby rendered unfit for food. The destruction of the carcasses would, moreover, involve a large additional charge upon the Exchequer, amounting probably to some £4000 a year, and having regard to these considerations I am not prepared to adopt the suggestion of the honourable Member. I may add that the carcasses are thoroughly examined by a veterinary surgeon before being allowed to be sold for food.

Coccidiosis in Rabbits.

MR. MORRELL asked the President of the Board of Agriculture whether he had information as to the existence of disease of the nature of tuberculosis affecting the liver of the rabbit, specially prevalent this year, and if so whether he would cause inquiry to be made and information laid before the Commission on Tuberculosis as being a disease possibly affecting the food of man. MR. AILWYN FELLOWES said: I am advised that the disease to which my honourable friend refers is caused by an animal parasite and that it is not of the nature of tuberculosis. Its correct name is coccidiosis. In these circumstances it does not appear to be necessary for any communication to be made to the Royal Commission on Tuberculosis on the subject. It is not considered by the Board's veterinary officers that the disease is attended with any danger to man but I propose to bring the matter under the notice of the Local Government Board.

BOOKS, ETC., RECEIVED.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent Garden, W.C.

A Handbook of Intestinal Surgery. By Leonard A. Bidwell, F.R.C.S., Surgeon, West London Hospital. Price 6s. net.

The Diagnosis of Diseases of Women. A Treatise for Students and Practitioners. By Palmer Findley, B.S., M.D., Assistant Professor of Gynecology and Obstetrics, Rush Medical College in Affiliation with the University of Chicago. Second edition, revised and enlarged. Price 21s. net.

BERGMANN, J. F., Wiesbaden. (F. BAUERMEISTER, 49, Gordon-street, Glasgow.)

Die Ohrenheilkunde der Gegenwart und ihre Grenzgebiete. In Einzeldarstellungen herausgegeben von Dr. Otto Körner in Rostock. V. Die Verletzungen des Gehörorganes. Von Dr. A. Passow, A.O. Professor an der Friedrich-Wilhelms-Universität und O Professor an der Kaiser-Wilhelms-Akademie für das Militär-ärztliche Bildungswesen zu Berlin. Price M.9.60, or 9s. 9d.

CASSELL AND CO., LIMITED, London, Paris, New York, and Melbourne.

The Care and Management of Delicate Children. By Dr. Percy Lewis, Honorary Medical Officer to the Victoria Hospital, and Surgeon to St. Andrew's Convalescent Home, Folkestone. Price 3s. 6d.

CHURCHILL, J. AND A., 7, Great Marlborough-street, W.

The Diseases of Children. By James Frederic Goodhart, M.D., LL.D. Aberd., F.R.C.P., Consulting Physician to the Evelina Hospital for Sick Children. Eighth edition. Edited by George Frederic Still, M.A., M.D., F.R.C.P. Assistant Physician for Diseases of Children, King's College Hospital. Price 12s. 6d. net.

DOIN, OCTAVE, 8, Place de l'Odéon, Paris.

De la Médication Sulfurée. Par le Dr. Ferras, Ancien Interne des Hôpitaux de Paris. Préface d'Albert Robin, de l'Académie de Médecine. Price Fr.3.

FISCHER, GUSTAV, Jena.

Die Talma-Drummondsche Operation. Ihre Indikation, Technik und die bisher erzielten Resultate. (Aus der Königl. Chirurgischen Universitätsklinik zu Königsberg i.Pr. [Prof. v. Eiselsberg und Geh.-Rat. Garré.] Von Privatdozent Dr. Bunge, Oberarzt der Klinik. Abdruck aus dem Klinischen Jahrbuch. Vierzehnter Band. Price M.3.60.

GLAISHER, HENRY J., 57, Wigmore-street, Cavendish-square, W.

Anæsthetic Difficulties and How to Combat Them. By A. de Prendervilie, M.R.C.S., Senior Anæsthetist to the Tottenham Hospital. Price 1s. net.

HARTLEBEN, A., Seilerstätte, 19, Wien.

Ignaz Philipp Semmelweis. Sein Leben und Wirken. Urteile der Mit- und Nachwelt. Von Dr. Fritz Schürer von Waldheim, prakt. Arzt in Wien. Mit 2 Portraits. Price, paper, K.10, or M.9; bound, 11K. 20h., or M.10.

JOHN BALE, SONS, AND DANIELSSON, LIMITED, 83-91, Great Titchfield-street, Oxford-street, W.

The British Sanatoria Annual. 1905. Price 5s. net.

Squint: its Causes, Pathology, and Treatment. By Claud Worth, F.R.C.S. Second edition. Price 6s. net.

KEENER AND CO., W. T., 90, Wabash-avenue, Chicago, Ill.

A Nurse's Guide for the Operating Room. Second edition, enlarged and revised. By Nicholas Senn, M.D., Ph.D., LL.D., C.M., Professor of Surgery, Rush Medical College, in Affiliation with the University of Chicago. Published under the direction of the Sisters of Charity, St. Joseph's Hospital, Chicago. Price not stated.

LANE, JOHN, The Bodley Head, Vigo-street, W.

Hysteria and Neurasthenia. By J. Michell Clarke, M.A., M.D. Cantab., F.R.C.P., Professor of Pathology, University College, Bristol, Physician to the Bristol General Hospital. Price 5s. net.

LEHMANN, J. F., Heustrasse 20, München.

Leitfaden zum Augenspiegelkurs. Von Dr. Fritz Salzer, Privatdozent an der Universität München. Price, bound, M.5.

Die Augenheilkunde des Praktischen Arztes. Von Dr. Fritz Salzer, Privat-dozent an der Universität München. Sonderdruck aus der Münchener Medizinischen Wochenschrift, 1905, Nr. 16. Price Pf.80.

LONGMANS, GREEN, AND CO., 39, Paternoster-row, E.C.

The Annual Charities Register and Digest. By C. S. Loch, Secretary to the Council of the Charity Organisation Society, London. Price 5s. net.

Diseases of the Anus and Rectum. By D. H. Goodsall, F.R.C.S. Eng., Senior Surgeon to the Metropolitan Hospital, and W. Ernest Miles, F.R.C.S. Eng., Surgeon to the Gordon Hospital for Diseases of the Rectum. In two parts (Illustrated). Part II. Price 6s. net.

Spectroscopy. By E. C. C. Baly, F.I.C., Lecturer on Spectroscopy and Assistant Professor of Chemistry, University College, London. Price 10s. 6d. (Text-books of Physical Chemistry. Edited by Sir William Ramsay, K.C.B., F.R.S.)

MALOINE, A., 25-27, Rue de l'Ecole de Médecine, Paris.

L'Agent Pathogène de la Syphilis: Nature, Cultures, Inoculations, Vaccination Préventive. Par le Dr. Henri Pommay, Médecin-Major de 1re Classe, Médecin-Chef de l'Hôpital Militaire d'Aumale (Algérie). Price Fr.3.

MASSON ET CIE, 120, Boulevard Saint-Germain, Paris.

Traité de Gynécologie Clinique et Opératoire. Par S. Pozzi, Professeur de Gynécologie à la Faculté de Médecine de Paris, Chirurgien de l'Hôpital Broca. Quatrième édition, revue et augmentée avec la collaboration de F. Jayle. Tome premier. Prix Fr.20.

P. BLAKISTON'S SON AND CO., 1012, Walnut-street, Philadelphia, U.S.A.

The Thyroid and Parathyroid Glands. By Hubert Richardson, M.D., late Pathologist to Mount Hope Retreat; Pathologist to Maryland Asylum and Training School for Feeble-minded Children. Price, cloth, $3.00

PENTLAND, YOUNG J., Edinburgh and London.

The Edinburgh Medical Journal. Edited by G. A. Gibson, M.D., F.R.C.P. Ed., Alexis Thomson, M.D., F.R.C.S. Ed., and Harvey Littlejohn, M.D., F.R.C.S. Ed. New Series. Vol. XVII. Price not stated.

REBMAN, LIMITED, 129, Shaftesbury-avenue, W.C.

Health and Disease in Relation to Marriage and the Married State. Edited by Geh. Medizinalrat Prof. Dr. H. Senator and Dr. med. S. Kaminer. The only authorised translation from the German into the English language by J. Dulberg, M.D., of Manchester, England. Volume II. Price 30s. net, two volumes complete.

ICEHAW, HENRY, 356, Strand, W.C.

An Introduction to Pathology and Morbid Anatomy. By T. Henry Green, M.D., F.R.C.P., Consulting Physician and Emeritus Lecturer on Clinical Medicine at Charing Cross Hospital. Tenth edition. Revised and enlarged by W. Cecil Bosanquet, M.A., M.D. Oxon., F.R.C.P. Lond., Assistant Physician (late Pathologist) to Charing Cross Hospital. Price not stated.

ENTELL, S., AND CO., LIMITED, 36, Maiden-lane, Strand, W.C.

Notes on How to Rear an Infant. By G. Bridgeford Proctor, L.R.C.P.E., L.R.C.S.E., L.M., L.F.P. & S.G., late Physician for eight years to Mrs. Leopold de Rothschild's Convalescent Home for Children, Brighton. Price 6d.

EJEVAL, F. R. DE, 4, Rue Antoine Dubois, Paris.

Les Kystes Hydatiques du Foie. Par le Dr. F. Dévé, Professeur suppléant à l'Ecole de Médecine de Rouen, Médecin des Hôpitaux. Préface du Professeur R. Blanchard. Price Fr.3.

Les Filaires du Sang de l'Homme. Par le Docteur Raymond Penel, Médecin Colonial de l'Université de Paris. Avec Préface du Professeur R. Blanchard, Membre de l'Académie de Médecine. Deuxième édition. (Travail de l'Institut de Médecine Coloniale de Paris, Laboratoire de Parasitologie.) Price Fr.6.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BARCLAY, W. B., L.R.C.P. & S. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Aldershot District of the county of Hants.

BATTEN, FREDERICK E., F.R.C.P. Lond., has been appointed Physician to the Hospital for Sick Children, Great Ormond-street.

CHARLES, JOHN ROGER, M.A., M.D., B.C. Cantab., M.R.C.P. Lond., M.R.C.S. Eng., has been appointed Honorary Assistant Physician to the Bristol Royal Infirmary.

DOBSON, J. F., M.S. Lond., F.R.C.S. Eng., has been appointed Honorary Assistant Surgeon to the General Infirmary at Leeds.

HATFIELD, JOHN RAYNOR, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer and Public Vaccinator for the Kingskerswell District by the Newton Abbot (Devon) Board of Guardians.

HOSFORD, ALFRED STROUD, M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Clinical Assistant to the Evelina Hospital for Sick Children, Southwark Bridge-road, London, S.E.

JOLLYE, E. W., M.R.C.S., L.S.A., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Donington District of the county of Lincoln.

JONES, JOHN, L.R.C.P. Edin., L.F.P.S. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Dolgelly District of the county of Merioneth.

MACGILVRAY, W. JACKSON HOOKER, L.R.C.P. & S. Edin., has been appointed Medical Officer to the General Friendly Collecting Society for Higher Broughton, Manchester, and District.

MOORE, L. A., L.R.C.P. Lond., M.R.C.S., has been appointed Dental Anæsthetist at the Bristol Royal Infirmary.

NICHOLLS, FRANK J., M.B., B.C. Cantab., M.R.C.S., L.R.C.P. Lond., has been appointed by the London County Council Medical Officer for District No. 25, Woolwich Borough.

PIGGOTT, F. C. H., has been appointed Surgeon to the Teignmouth (Devon) branch of the National Friendly Society.

POWNALL, E. DUNBAR, L.R.C.P. Lond., M.R.C.S., has been appointed Resident Medical Officer at the Winsley Sanatorium.

ROBINSON, WILLIAM, M.D., M.S., F.R.C.S., has been appointed Honorary Surgeon to the Sunderland Infirmary.

RUDGE, F. H., L.R.C.P. Lond., M.R.C.S., has been appointed Senior House Surgeon at the Bristol Royal Infirmary.

SCOTT, T. GRAHAM, L.R.C.P. Lond., has been appointed Third Anæsthetist to the Hospital for Sick Children, Great Ormond-street.

STOCK, W. S. VERNON, M.B., B.S. Lond., L.R.C.P. Lond., M.R.C.S., has been appointed Honorary Assistant Anæsthetist to the Bristol Royal Infirmary.

VAN BUREN, A. C. A., M.D., B.S., L.R.C.P. Lond., M.R.C.S., has been appointed Senior House Surgeon at the Bristol General Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ABERGAVENNY, MONMOUTHSHIRE ASYLUM.—Senior Assistant Medical Officer. Salary £250 per annum, with board, apartments, attendance, and washing.

ARMY MEDICAL SERVICE.—40 Commissions in the Royal Army Medical Corps.

BATH, ROYAL MINERAL WATER HOSPITAL.—Resident Medical Officer. Salary £100, with lodging, board, and laundry.

BOURNEMOUTH, ROYAL VICTORIA HOSPITAL.—House Surgeon. Salary £100 per annum, with board and lodging.

BRIGHTON, ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN, Dyke-road.—House Surgeon. Salary £80, with board, lodging, and washing.

CAIRO, SCHOOL OF MEDICINE.—Assistant to the Professor of Anatomy. Also Assistant to the Professor of Pathology. Salary in each case is £E320 per annum.

CHARING CROSS HOSPITAL.—Assistant Surgeon.

CHESTER, CITY AND COUNTY BOROUGH.—Medical Officer of Health. Salary £500 per annum.

CITY OF LONDON AND EAST LONDON DISPENSARY, 35, Wilson-street, Finsbury, E.C.—Medical Officer.

CLIFTON, YORKS, NORTH RIDING OF YORKSHIRE LUNATIC ASYLUM.—Medical Superintendent. Salary £600 per annum, with house and allowances.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—Assistant House Surgeon for six months. Salary £30, with board, residence, and washing.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Medical Officer for six months. Salary at rate of £100 per annum, with luncheon.

GATESHEAD DISPENSARY.—Assistant Medical Officer. Salary £160 per annum, without board or lodging.

GREAT NORTHERN CENTRAL HOSPITAL.—Physician.

HASTINGS, ST. LEONARDS AND EAST SUSSEX HOSPITAL.—Assistant House Surgeon. Honorarium 10 guineas for six months, with residence, board, and washing.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Assistant Physician.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon, unmarried. Also House Physician, unmarried. Also Assistant Casualty Medical Officer, unmarried. All three appointments for six months. Salaries £30, with board and residence.

LEEDS UNIVERSITY, FACULTY OF MEDICINE.—Demonstrator of Bacteriology. Salary £150 per annum.

LIVERPOOL DISPENSARIES.—Assistant Surgeon, unmarried. Salary £100 per annum, with board and apartments.

MARGATE, ROYAL SEA BATHING HOSPITAL.—Honorary Medical Officer in charge of Electrical Department.

METROPOLITAN ASYLUMS BOARD, LEAVESDEN ASYLUM, near Watford, Herts.—Third Assistant Medical Officer, unmarried. Salary £150 per annum, rising to £170, with rations, lodging, attendance, and washing.

NORTH-EASTERN HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—Assistant Physician. Also Assistant Surgeon.

NORFOLK AND NORWICH HOSPITAL.—Assistant House Surgeon for six months. Honorarium £20, with board, lodging, and washing.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer for four months. Salary at rate of £50 per annum, with board, residence, and washing.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—Assistant Physician.

ST. GILES', CAMBERWELL, INFIRMARY, Brunswick-square, Camberwell.—Assistant Medical Officer. Salary £110 per annum, increasing to £120, with apartments, board, and washing.

ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta-street, Covent Garden, W.C.—Junior House Surgeon for six months. Salary at rate of £50 a year, with board, lodging, and washing.

SOUTHAMPTON.—Temporary Assistant Medical Officer of Health for two months.

SOUTH UIST (SOUTHERN DIVISION).—Medical Officer. Salary £77 10s.

STRAITS SETTLEMENT, MUNICIPALITY OF THE TOWN OF SINGAPORE.—Assistant Municipal Health Officer, unmarried. Salary £400 per annum.

SWANSEA GENERAL AND EYE HOSPITAL.—Assistant House Surgeon. Salary £50 per annum, with board, apartments, washing, and attendance.

WESTERN GENERAL DISPENSARY, Marylebone-road, N.W.—Junior House Surgeon. Salary at rate of £30 per annum, with board, residence, and washing.

WESTMINSTER HOSPITAL, Broad Sanctuary, S.W.—Medical Registrar. Salary £50 per annum.

WINCHESTER, ROYAL HANTS COUNTY HOSPITAL.—House Physician, unmarried. Salary £65 per annum, rising to £75, with board and residence, &c.

THE Secretary of State, Home Office, S.W., gives notice that in consequence of the death of Dr. James Murphy the appointment held by him of Medical Referee under the Workmen's Compensation Acts, 1897 and 1900, for Sunderland and Seaham Harbour County Court Districts in County Court Circuit No. 2 is vacant.

Births, Marriages, and Deaths.

BIRTHS.

BARENDT.—On June 25th, at 65, Rodney-street, Liverpool, W., the wife of Frank H. Barendt, M.D. Lond., F.R.C.S. Eng., of a son.

CREE.—On June 23rd, at St. Hilary-terrace, Stoke, Devonport, the wife of Major Gerald Cree, R.A.M.C., of a son.

LAWSON.—On the 24th June, at 12, Harley street, Cavendish-square, W., the wife of Arnold Lawson, F.R.C.S., of a son.

NEWTON.—On June 27th, at Fairfield, Chelmsford, the wife of H. W. Newton, M.R.C.S., &c., of a son.

PEMBREY.—On June 16th, at Mount Pleasant, Scrase's-hill, Hayward's Heath, the wife of M. S. Pembrey, M.D., of a daughter.

TURNER.—On June 25th, at Westbury, Purley, Surrey, the wife of S. Duke Turner, M.D., D.P.H., of a daughter.

MARRIAGES

CARMICHAEL—CLAYTON.—On June 24th, at St. Mary's Church, Long Ditton, Henry Carmichael, M.B., C.M., of The Elms, East-hill, Wandsworth, to Margaret Lydia, daughter of Charles H. Clayton.

GATES—FOWLER.—On June 24th, at All Saints, Great Marlow, Edward Alfred Gates, M.D., M.R.C.P., to Mary Elizabeth, third daughter of the late Major-General Fowler, R.E.

DEATHS.

CUNINGHAM.—On June 26th, at Buckingham Palace-mansions, James MacNab Cuningham, M.D., LL.D., C.S.I., Surgeon-General with the Government of India, Hon. Surgeon to the King, aged 76.

TURNBULL.—On June 22nd, at Lansdowne-crescent, W., Alexander Turnbull, M.D., Inspector-General of Hospitals and Fleets, R.N. (retired), aged 67.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE MISSION TO LEPERS IN INDIA AND THE EAST.

IN the thirtieth annual report of this society continued extension of work is recorded. Including the inmates of the new asylums opened last year the mission is now supporting, or in some way relieving, about 7000 lepers and their children. Perhaps the most hopeful branch of the society's work is the rescue of the untainted children of leprous parents for whom 20 special homes are maintained. One of the events of the past year was the opening of the new asylum at Tarn Taran in the Punjab. This institution takes the place of a miserable collection of huts in which the lepers of that district formerly existed in misery and squalor. The asylum was opened by the Lieutenant-Governor of the Punjab and the sympathy of the authorities with this benevolent work was further shown by the visit of Sir Andrew Fraser to two of the Bengal asylums of the mission, in the largest of which 700 lepers and their children are now provided for. The report tells of interesting and on the whole very hopeful experiments with leprolin, the new serum discovered by Captain E. R. Rost of the Indian Medical Service. A number of cases treated with leprolin have apparently received relief; they are being tested in observation wards with a view to determine whether the improvement is permanent. The mission is carrying on work in as many as 73 stations in India, China, Japan, and other parts of the Far East, their total expenditure for the year being £19,800.

WANTED—A HOME.

To the Editors of THE LANCET.

SIRS,—Can any of your readers tell me of a home where a male patient suffering from paralysis involving the excretory organs can be admitted and taken care of? He is in a position to pay about £3 3s. per week inclusive. I am, Sirs, yours faithfully,

BERTRAM ADDENBROOKE.

34, Mill-street, Kidderminster, June 20th, 1905.

A NEW METHOD OF GENERATING FORMALDEHYDE GAS FOR FUMIGATING PURPOSES.

THE high value of formaldehyde gas as a fumigating agent has to some extent been discounted by the complicated and expensive generators which are very liable to get out of order and by the length of time required to generate sufficient gas to fumigate an apartment. To overcome these difficulties the vapourisation of solid polymerised formaldehyde, paraform, by means of a burning charcoal cone was resorted to. Unfortunately this proved an inefficient substitute owing to several causes, chief of which were the absence of moisture, the complete combustion of a large part of the paraform, and the volatilisation of the paraform as such instead of decomposing into simple gaseous formaldehyde, and the risk of setting fire to carpets and furniture. These various difficulties appear to have been overcome by Mr. Henry V. Walker of the Department of Health, Brooklyn, U.S.A., according to the Journal of the American Chemical Society of March, 1905, p. 277. He suggests a method of liberating formaldehyde gas from its aqueous solution by the addition of lime as a dehydrating agent. In order to prevent the calcium hydroxide which goes into solution from converting the formaldehyde into alcohol and acid aluminium sulphate is added which forms an insoluble sulphate with the lime. In practice the mixture is made by dissolving 20 to 25 pounds of commercial aluminium sulphate in five gallons of hot water and mixing this solution with 15 gallons of 40 per cent. formaldehyde solution. Eight fluid ounces of this mixture and one pound of lime are used for every 1000 cubic feet to be fumigated. The lime should be in the form of coarse powder or lumps and it is essential that it should slake rapidly with cold water. This method has the advantages of not requiring any special apparatus, of cheapness, and of freedom from danger of fire. In municipal practice it has given excellent results, over 90 per cent. of successful fumigations, as tested by bacillus pyocyaneus, being obtained. This high degree of success is doubtless largely due to the great rapidity with which the gas is evolved, a sufficient quantity to fumigate an ordinary apartment being liberated in from five to ten minutes.

TO DEADEN SOUND.

To the Editors of THE LANCET.

SIRS,—In 1894 I suggested a simple expedient for the prevention of insomnia. It was to exclude sound and light by lying on the edge of the pillow which fold from the back of the neck over the ears and eyes. I am, Sirs, yours faithfully,

Welbeck-street, W. E. D. MAPOTHER.

S.—We cannot publish our correspondent's letter as it amounts to a reflection upon the ability and honesty of the whole nursing profession founded upon individually unfortunate experience. Nurses detected by a patient or a patient's friends in such conduct should at once be reported to the medical man in charge of the case and to any nursing establishment or institution with which they may be connected.

Medico.—The professional prospects of a medical man starting practice in the district named are not very good. Most of the districts are sparsely populated, while in the townships medical men are already established. Canada turns out highly qualified medical men every year from the excellent Universities of Montreal and Toronto.

Senex.—The subject has been dealt with on several occasions recently in our columns and we think that to make further allusion to it will be inadvisable. Undoubtedly the situation constitutes one of the drawbacks of medical service in the army, but perpetual ventilation of the grievance does not seem to us likely to lead to reform.

Coincidence has written us an interesting letter but although it is interesting it has failed to convince us.

C. S.—We fear the suggestion is hardly practicable.

ERRATUM.—In our table of "Dispensaries" given in "THE LANCET Hospital Sunday Fund Supplement," published on June 17th, p. 1696, the number of out-patients' visits at Kilburn, Maida Vale, and St. John's Wood Dispensary should have been 7958 and not 5958 as there given.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (3rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.).

TUESDAY (4th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.).

WEDNESDAY (5th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.) Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.).

THURSDAY (6th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.).

FRIDAY (7th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.).

SATURDAY (8th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

WEDNESDAY (5th).—OBSTETRICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8 P.M. Specimens will be shown by Dr. Boxall, Dr. Fairbairn, Mr. Targett, Dr. Heller, Dr. Macnaughton-Jones, and Mrs. Boyd. Short Communications:—Mrs. Scharlieb: A Case of Uterine Tumour with (?) Sarcoma or Endothelioma.—Mr. Targett and Mr. Hicks: Malignant Embryoma of Ovary.

THURSDAY (6th).—NORTH-EAST LONDON CLINICAL SOCIETY (Tottenham Hospital, N.).—4 P.M. Annual General Meeting.

FRIDAY (7th).—OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM (11, Chandos-street, Cavendish-square, W.).—8 P.M. Card

Specimens, 8.30 P.M. Papers:—Mr. C. Worth: Hereditary Influence in Myopia.—Mr. M. S. Mayou: Tubercle of the Iris.—Mr. S. Snell: (1) Sympathetic Ophthalmia (severe), Recovery of Perfect Sight in Exciting and Sympathising Eyes; (2) Cases of Sympathetic Ophthalmitis arising after Enucleation; (3) A Further Instance of Glioma in more than One Member of the same Family.—Mr. Cruise: Microphthalmos.—Mr. Nettleship: (1) Note on the Prognosis in Chronic Serpiginous Ulcer (Mooren's Ulcer) of the Cornea; (2) Sequel to a Case of Oxycephaly or "Tower Skull," published in 1887, by R. Nettleship. Annual General Meeting.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (3rd).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. J. M. H. Macleod: Clinique. (Skin.) 5.15 P.M. Dr. F. J. McCann: The Treatment of Pruritus and Allied Conditions affecting the Vulva.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. R. J. Reece: Infection, Immunity.

TUESDAY (4th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. L. Guthrie: Clinique. (Medical.) 5.15 P.M. Dr. G. F. Still: Constipation in Infancy and Childhood.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Russell: Arterio-sclerosis.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—4.30 P.M. Lecture:—Dr. G. N. Meachen: Loss of Hair, its Causes and Treatment.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M. Dr. Collier: Peripheral Neuritis, Interstitial.

WEDNESDAY (5th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. P. J. Freyer: Clinique. (Surgical.) 5.15 P.M. Dr. J. Fawcett: Cancer of the Stomach.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Beddard: Practical Medicine.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (Brompton).—4 P.M. Lecture:—Mr. S. Boyd: Tuberculous Disease of the Spine in Adults.

THURSDAY (6th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M. Dr. D. Sommerville: Errors of Digestion in Relation to Disease.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Mr. Baldwin: Practical Surgery.

HOSPITAL FOR SICK CHILDREN (Gt. Ormond-street, W.C.).—4 P.M. Lecture:—Dr. Still: Habit Spasm.

SAMARITAN FREE HOSPITAL FOR WOMEN (Marylebone-road, N.W.).—3 P.M. Lecture:—Dr. Bell: Pregnancy and Fibroids.

MOUNT VERNON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (7, Fitzroy-square, W.).—5 P.M. Lecture:—Mr. J. Berry: Foreign Bodies in the Air-passages. (Post-Graduate Course.)

ROYAL INSTITUTE OF PUBLIC HEALTH.—5 P.M. Mr. A. Macmorran: Some Legal Difficulties in the Administration of the Public Health Statutes.

FRIDAY (7th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. S. Stephenson: Clinique. (Eye.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—5 P.M. Dr. Robert Jones: Treatment of Insanity.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M. Dr. Collier: Peripheral Neuritis, Toxic.

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index to Vol. I. of 1905, which was completed with the issue of June 24th, and the Title-page to the Volume, are given in this number of THE LANCET.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1905 will be ready shortly. Bound in cloth, gilt lettered, price 18*s.*, carriage extra.

Cases for binding the half-year's numbers are now ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

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WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

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SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTICE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE. It has come to the knowledge of the Manager that in some cases higher rates are being charged, on the plea that the heavy weight of THE LANCET necessitates additional postage above the ordinary rate allowed for in the terms of subscriptions. Any demand for increased rates, on this or on any other ground, should be resisted. The Proprietors of THE LANCET have for many years paid, and continue to pay, the whole of the heavy cost of postage on overweight foreign issues; and Agents are authorised to collect, and do so collect, from the Proprietors the cost of such extra postage.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, June 29th, 1905.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
June 23	30·37	E.	...	127	76	56	56	64	Fine
,, 24	30 31	N.E.	...	123	73	51	53	55	Overcast
,, 25	30·17	N.E.	...	90	74	55	56	61	Cloudy
,, 26	29 92	N.E.	0·02	86	71	57	57	62	Cloudy
,, 27	29·86	N.W.	...	127	82	60	62	67	Hazy
,, 28	29·79	S.W.	...	100	78	59	59	62	Overcast
,, 29	29·89	S.E.	...	98	70	58	59	65	Overcast

During the week marked copies of the following newspapers have been received:—*Glasgow Herald, Bristol Times and Mirror, Yorkshire Post, Hampshire Telegraph, Aberdeen Journal, Norwich Evening News, Southwark and Bermondsey Recorder, Bexhill Chronicle, Glasgow Evening Citizen, Bethnal Green News, Marylebone Mercury, Hackney Mercury, Yorkshire Evening News, Hammersmith Observer, Belfast News Letter, Plymouth Mercury, Notts Express, Bristol Mercury, Stafford Advertiser, Blackpool Gazette News, Morning Leader, Exeter Chronicle, Kensington News, Hull Eastern Morning News, &c.*

Communications, Letters, &c., have been received from—

A.—Dr. Bertram Addenbrooke, Kidderminster; Dr. A. G. Auld, Lond.; Dr. A. Percy Allan, South Croydon; Association of Women Pharmacists, Lond., Secretary of; Apothecaries' Hall of Ireland, Registrar of; Æternum nafas.

B.—Mr. C. Birchall, Liverpool; Messrs. T. S. Browne, Lond.; Dr. T. C. Booth, Urmston; Mr. W. B. Boord, Pateley Bridge; Dr. T. R. Bradshaw, Liverpool; Professor J. Beard, Edinburgh; Rev. R. Howel Brown, Lond.; Rev. J. Bamber, Lond.; Miss S. A. Bonnerjee, M.B., Croydon; Dr. A. Grainger Bissett, Wigan; Rev. F. H. Bolingbroke, Lond.; Mr. J. H. Butler, Lond.; Messrs. Baillière, Tindall, and Cox, Lond.; Messrs. Bedford and Co., Lond.; Miss A. M. Bowditch, Newbury; Mr. J. Brewer, Lond.; Mr. W. H. Brown, Leeds.

C.—Mr. F. H. Cooke, Birch; Dr. J. Rupert Collins, Cheltenham; Messrs. F. Cave-Thomas and Co., Foochow; Rev. W. S. Carter, Lond.; Viscount Clifden, Lond.; Rev. H. Culshaw, Iver Heath; Mr. J. J. Chapman, Lond.; *Chester Courant*, Manager of; County Borough of Huddersfield, Clerk of; Camberwell Guardians, Clerk of; California State Library, Sacramento, Librarian of; Mr. G. G. Campbell, Hatherleigh; Dr. M. v. Cackovic, Zagreb; Dr. John Cowper, Shanklin.

D.—Dr. Reginald Dudfield, Lond.; Mr. P. J. de Sousa, Karachi; Mr. Haden Dadson, Lond.; Dr. A. Duncan, Lond.; Derbyshire Royal Infirmary, Derby, Secretary of; Dr. A. Douglas Lond.; Miss K. A. Daniell, Ipswich; Mr. A. B. Duprey, Trinidad; The Dominion Belting &c., Co., Lond.

E.—Dr. W. Edgecombe, Harrogate; Epidemiological Society of London, President and Council of the; Enquirer.

F.—Miss Forrest, Bournemouth; Messrs. Fairchild Bros and Foster, Lond.; Rev. C. J. Finch, Lond.

G.—Mr. J. D. Gourlay, Glasgow; Mr. J. L. Galbraith, Glasgow; Rev. E. D. Green, Lond.; Gateshead Dispensary, Secretary of; Mr. H. O. Grenfell, Eversley; Mr. H. E. Girdlestone, Bournemouth; Mrs. Gordon, Witley; Mr. B. Gooch, Lond.; Mr. F. Griffith, Lond.

H.—Dr. W. J. Howarth, Derby; Dr. W. N. Heard, Swanage; Captain L. W. Harrison, R.A.M.C., Sialkot, India; Dr. Charles Higginson, Mundesley; Hastings, &c., Hospital, Secretary of; Mr. C. Hohmann, Lond.; Rev. H. Handley, Lond.; House Surgeon; Dr. Walter K. Hunter, Glasgow; Mr. F. W. Hewitt, Lond.

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